United States
Department of
Agriculture

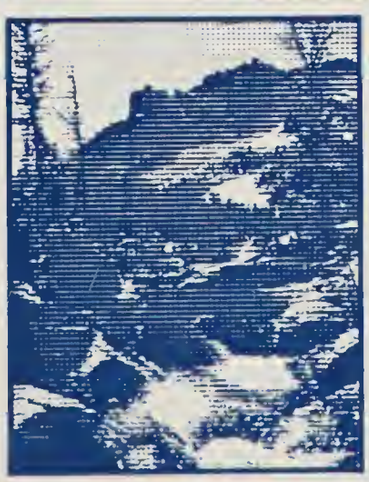
Forest
Service

Washington, D.C.

Report of the Forest Service

Fiscal Year 1983

RPA



United States
Department of
Agriculture

**Forest
Service**

February 1984

Report of the Forest Service

Fiscal Year 1983

Executive Summary

I am pleased to transmit the Report of the Forest Service for fiscal year 1983. The report describes Forest Service accomplishments during the year. The agency's activities include management of the National Forests and Grasslands, providing technical and financial assistance to improve management of State and private forest lands, and forestry research.

The overall emphasis in Forest Service activities this year was that of reducing costs and improving efficiency while continuing an adequate level of goods and service to the public.

Some of the primary thrusts toward these goals included colocation of some units and consolidation of some functions. For example, research support services and administrative support for regional offices have been merged in Portland, Oregon, and Odgen, Utah.

Special teams were formed to help improve productivity, and they addressed such problems as burdensome paperwork requirements. They also found that productivity could be improved by using state-of-the-art technology, and by training managers and supervisors on managing new technology.

The new technology includes acquisition of a computerized distributed information processing system that will be located throughout the Forest Service. It comprises word processing, data processing, and telecommunications capabilities, and is expected to increase productivity and allow the transmission of information in a more efficient and timely manner. It will be installed over the next 4 years.

The Emergency Jobs Appropriations Act (P.L. 98-8), known as the jobs bill, was passed by Congress, appropriating $85 million dollars to create employment while getting needed work accomplished. About $25 million was allocated for reconstruction and replacement of deteriorating recreation facilities. Another $15 million was alloted for reforestation, resulting to date in treatment on 67,000 acres. Timber stand improvement was accomplished on 158,000 acres when a portion of another $20 million appropriated for that purpose was expended. It is estimated that the jobs bill was responsible for creating more than 7,500 jobs.

Expenditures for fiscal year 1983 totaled $2.06 billion, compared to $2.1 billion last year. The National Forest System represented 83 percent of this expense, with Research spending 6 percent and State and Private Forestry, 4 percent. The additional 7 percent was split between working capital funds and the Human Resource Program.

Receipts rose in fiscal year 1983. Money received from timber sales, mineral leasing, grazing and recreation fees and other sources totaled $966.3 million. This compares with $769 million during the preceding fiscal year, an increase of 26 percent. The increase can be mainly attributed to the rise in demand for wood products.

The number of employees in the agency has declined steadily in the past 3 years. In fiscal year 1983 full-time equivalents (FTE's) dropped 1,134 to 41,850. This includes 30,702 permanent and 11,148 other FTE's. This is in response to administration efforts to reduce the Federal work force.

The Equal Access Program, which insures that all publics have access to Forest Service programs without discrimination, assisted over 4,000 minority landowners, provided a 70-percent combined minority/women participation in the Jobs Corps, and issued over $20 million in contracts to minority prime contractors.

National Forest System programs emphasized the sound professional management of all resources within a period of stable to declining budgets. Priority was placed on developing the most cost-effective programs with special emphasis placed on the revenue producing programs.

Savings were noted in many areas, one being the construction of roads. By reducing the standards to the minimum necessary for hauling timber, while protecting other resource values, some Regions were able to lower expenditures by over 30 percent. This savings resulted in more miles being constructed.

The effects of the increased demand for wood and wood products can be seen in the amount of increased harvest and revenues received, indicating a recovering economy. Timber harvested on the National Forests in 1983 was 9.2 billion board feet with a value of $650 million. This compares with the harvest of 6.7 billion board feet and a value of $340 million in 1982. The volume of timber sold for 1983 was 11.1 billion board feet with a value of $774 million. This compares with 10 billion board feet sold with a value of $614 million in 1982.

A policy decision was made to authorize 5-year extensions of certain timber sale contracts. Many existing contracts were bid during a period of high demand and high prices and are uneconomical to operate under current market conditions. Without an extension of time, many contractors would have defaulted and some firms forced into bankruptcy. This approach of requiring timber purchasers to harvest the timber at contract bid prices, but with additional time, was judged to be the least costly alternative for the Federal Government.

The Forest Service processed over 30,000 cases involving minerals in fiscal year 1983—far more than had been expected. This augmentation in mineral activity is a result of efforts to reduce the Nation's dependence on imports, on the country's growing mineral needs, and on the unreliability of foreign supply sources.

Recreation receipts were up 4 percent from last fiscal year and 29 percent from the year before, a significant increase when recreation use actually decreased by 2.4 million visitor days from 1982. The gain in dollars is

largely because of attempts to bring charges more in line with the private sector.

Fuelwood cutting continues to be popular. The Forest Service has shifted this year from free fuelwood to $10 permits, except in areas where the supply exceeds the demand. Over 1.3 million cords were cut on charge permits, bringing $4.3 million into the Treasury, and an additional 2.1 million cords were cut free of charge.

Other noteworthy accomplishments in fiscal year 1983 include the following:

— The Forest Service received a National Environmental Industry Award during the year for its role in developing and implementing a new approach for assuring environmental protection through effective regulatory and environmental planning. The process, known as the Joint Review Process, developed in cooperation with State and local agencies in Colorado, coordinates Federal, State, and local review of minerals projects through open and early dialogue and review. This process is less costly and more effective for all concerned.

— An interagency Grizzly Bear Committee was formed, with the purpose of working toward better coordinated recovery of that threatened species. This national committee coordinates Federal and State efforts to save the grizzly.

— The trend of increasing cannabis growth was reversed this year for the first time since 1979, with a reduction from about 6,000 operations in 1982 to 5,700 in 1983. Most of this progress was made in California, Oregon, and the Southeast.

— Fewer acres were burned this year than any year in the past 10. The generally light fire season allowed an 18-percent increase in fuel management accomplishments that was not expected.

— Animal unit months of livestock grazing totaled 10 million, with more than 14,000 grazing permittees. Receipts were down 22 percent from 1982 because of a reduction in fees due to the congressionally specified grazing fee formula, not because of less use.

— A total of 208,000 acres of land was reforested, with the backlog of reforestation down to 7 percent of the original 3 million acres.

— Timber stand improvement such as precommercial thinning was accomplished on 555,000 acres.

— Visitor days on National Forest System lands this year numbered 228 million. Forty-two percent of all recreation on Federal lands is on National Forests and Grasslands.

— Mt. Saint Helens National Volcanic Monument was dedicated May 18, the third anniversary of the mountain's eruption. It received 400,000 visits during the year.

When the ninth circuit court ruled that the 1979 Roadless Area Review and Evaluation (RARE II) environmental statement and associated procedures were inadequate under the National Environmental Policy Act, the Forest Service began an effort to re-evaluate roadless areas as an integral part of the forest planning process. This re-evaluation delayed forest plans for up to 2 years, with most plans now being scheduled for completion in 1985. As of October 1983, 20 draft and 4 final plans have been approved for filing with the Environmental Protection Agency.

State and Private Forestry programs emphasized the production of timber on nonindustrial, privately owned, forested land; protection of forest lands from fire, insects, and disease; and transfer of new technology.

Activities supporting these aims included the following:

—Treating 2 million acres of forested land from spruce budworm, southern pine beetle, and mountain pine beetle.

—Publishing "The Truss-Framed Construction Manual" in cooperation with the National Association of Homebuilders Research Foundation, and a tax guide for forest landowners.

—Assisting in extending wood resources by 116 million cubic feet of final products through improved utilization.

—Issuing 12 final and 17 draft State forest resources plans covering 268 million acres.

—Transfering technology, including a project to provide information about raising poplars for energy production. Cooperators include three major forest product companies.

—Completing a national analysis on the efficiency of fire protection on non-Federal wildlands, and a study on roles of private sector and governmental bodies in protecting State and private lands from wildfire.

Forest Service Research programs provided technology needed to better manage and use the resources of the Nation's forest and rangelands. The program also supported international forestry by cooperating with several foreign countries.

Fields of increased emphasis during fiscal year 1983 included old-growth wildlife habitat in the Pacific Northwest, integrated pest management, and international trade. Some accomplishments include:

—Entering the arena of genetic engineering, where

researchers worked on methods of altering the genetics of trees to increase growth and productivity and improve their resistance to disease.

—Directing more than $1.6 million into research on the impact of acid deposition on forests and on water.

—Obtaining the registration, by the Enviromental Protection Agency of Neocheck-S, a virus used for the biological control of the European pine sawfly. It was developed through the combined talents of academia and the Forest Service.

—Coming up with new ways to use the various parts of the tree from the log down to the chip. One example is a machine that slices leftover wood into chunks that are then used for composite wood products or as fuel.

—Continuing research on watershed management, wildlife and fish habitat, range, recreation, timber, and biomass energy.

Human Resource Program

— Over 44,000 volunteers were attracted to contribute their time and effort to National Forest endeavors this year, doing 1,700 person-years of work.

— Volunteers contributed $21 million worth of work to the Forest Service this year. Of particular note is a new volunteer program, Touch America Project (TAP), for 14-17 year olds. It consists of a partnership among youth, businesses, communities, nonprofit organizations, and Government. For example, the Boys Club of Los Angeles involved Hispanic youth in conservation work on trails, with a Southern California utility company paying most of the expenses.

— Older Americans numbering 5,107 were employed, with the Government return from this investment being $1.56 for every $1 spent.

— The Forest Service hired 2,400 youths aged 15 to 18 for the Youth Conservation Corps, with the return to the Government being $1.41 for every $1 spent.

In short, fiscal year 1983 was a very productive year for the Forest Service with significant gains in efficiency and productivity. In spite of many obstacles and challenges, all major targets were successfully met.

R. MAX PETERSON
Chief

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1/ Includes cooperative law enforcement.
2/ Tables only.

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Introduction

THE FOREST SERVICE—WHAT IT IS AND WHAT IT DOES

The Forest Service is responsible for national leadership in forestry, influencing the management of about one-third of the Nation's total land. This land includes such diverse areas as forests, range and grasslands, alpine areas, lakes, and streams. The Forest Service is a highly decentralized organization in the Federal Government, with most of the day-to-day decisions made at the local level. The guiding principle for land use is "the greatest good to the greatest number in the long run." The major jobs include:

Management of the National Forests and Grasslands

The Forest Service manages 191 million acres of public lands consisting of 155 National Forests, 19 National Grasslands, and 18 Land Utilization Projects located in 44 States, Puerto Rico, and the Virgin Islands. The management and protection activities include selling timber, enhancing wildlife habitats, identifying property boundaries, designing and building roads, managing campgrounds, building trails, fighting fires, monitoring water quality, and managing grazing lands.

Cooperative Forestry

The Forest Service cooperates with the States and territories, local governments, forest industries, and private landowners to promote good forestry and land stewardship practices on non-Federal forest lands and to increase the efficient use of wood. Most of the technical and financial assistance is provided through the State forestry organizations. Assistance is extended for a varied mix of projects such as: controlling tree diseases and damaging insects and rodents, producing improved seedlings, reducing soil erosion, using trees for energy conservation, reforestation, improving timber stands, protecting against fire, and developing wildlife habitats.

Forest Research

The Forest Service research organization is assigned the mission of providing leadership in forest and rangeland research throughout the United States. Forest Service researchers conduct a wide variety of studies in the areas of biological, physical, and social sciences. This work is often done in conjunction with forestry schools and agricultural experiment stations throughout the United States. Results of the research are made available to users through publications, films, computer programs, and other methods. This research includes developing disease-resistant seedlings, mapping lightning fires, controlling forest pests, and obtaining more useable products from wood processing operations.

The Forest Service also represents the U.S. Government in most world forestry matters. In cooperation with the Department of State and the Food and Agriculture Organization (FAO) of the United Nations, the Forest Service provides technical assistance to other countries to help solve their forestry-related problems.

Human Resource Development

Ever since the Civilian Conservation Corps of the 1930's, National Forests have provided work and training for the Nation's underemployed. Today, the Forest Service participates in many human resource programs aimed at putting people to work and improving living conditions in rural areas.

FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT (RPA)

Overview of RPA

The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended, directs the Secretary of Agriculture to prepare a comprehensive, long-range assessment of the Nation's renewable resources and to develop a program for Forest Service activities.

The most recent RPA assessment was in 1979 and the most recent program was in 1980. The draft environmental impact statement for the 1985 program update, which covers 1986 to 2030, was available for review in January 1984. This effort is largely based on the 1979 assessment. The assessment has been supplemented where additional data or analysis was needed to improve the understanding of the renewable resources situation. The supplement has been completed and was available early in 1984. The program update will be transmitted to Congress in late 1984.

The revised Statement of Policy for 1980 is on page 161 of this report.

Annual Report to Congress

The act also requires the Secretary to submit an Annual Report to Congress on Forest Service accomplishments and progress in implementing the RPA Program. This report covers fiscal year 1983 3/.

Required in the annual report are the following:

—A description of the status of major research programs, significant findings, and how these findings will be applied in National Forest System management and in State and private Forest Service programs.

3/ Unless otherwise stated, all references to years in this report are fiscal years.

—A description of the cooperative forestry assistance programs, including status, accomplishments, needs, and work backlogs.

—A report on the progress of incorporating the legislatively required standards and guidelines into the land management plans for units of the National Forest System.

—A summary of estimated expenditures, on a representative sample basis, for reforestation, timber stand improvement, and the sale of timber from the National Forest System, compared to the return to the Government from such timber sales.

—An identification, on a representative sample basis, of advertised timber sales made below the estimated expenditures mentioned above.

This document includes other reports that Congress requires at the time of the annual report. These are as follows:

—A report identifying the amount and location, by Forest, State, and productivity class, where practicable, of all lands in the National Forest System where land management plans have indicated the need to reforest areas that have been cut over or otherwise denuded or deforested, and all lands with stands of trees that are not growing at their best potential.

—A report estimating the appropriations necessary to replant and otherwise treat an acreage equal to the acreage to be cut over that year, plus a sufficient portion of the backlog of lands found to be in need of treatment to eliminate the backlog between the passage of RPA and the end of fiscal year 1985.

—A report on the amounts, types, and uses of herbicides and pesticides used in the National Forest System, including the beneficial or adverse effects of such uses.

Administration

INTRODUCTION

A broad range of new activities was undertaken this past year to reduce costs, streamline the Federal Government structure, and improve overall agency efficiency while maintaining a high quality of service to the public.

Included in these activities were a number of programs aimed at these objectives — Reform '88, the President's Private Sector Survey on Cost Control, and the Federal Field Structure Review. The Department of Agriculture and the Forest Service developed action plans in response to Reform '88.

Some of these plans now being effected include colocation and consolidation of Agency offices, increased use of automated technology, improving communications, and eliminating unnecessary administrative requirements.

Federal Field Structure Review, now under way, also involves eliminating unnecessary offices, as well as consolidating administrative support services and increasing the use of third parties to provide services (e.g., state and local governments and the private sector).

Additional efforts were undertaken to reduce administrative burdens, such as unnecessary paperwork and lengthy processes for approval of minor items (e.g., space allocation, installation of terminals).

RECEIPTS AND EXPENDITURES

The Forest Service receives operating funds through the congressional appropriations process and from a variety of cooperator deposits. Receipts are generated from such Forest Service operations as timber sales, grazing fees, and mineral leases and permits.

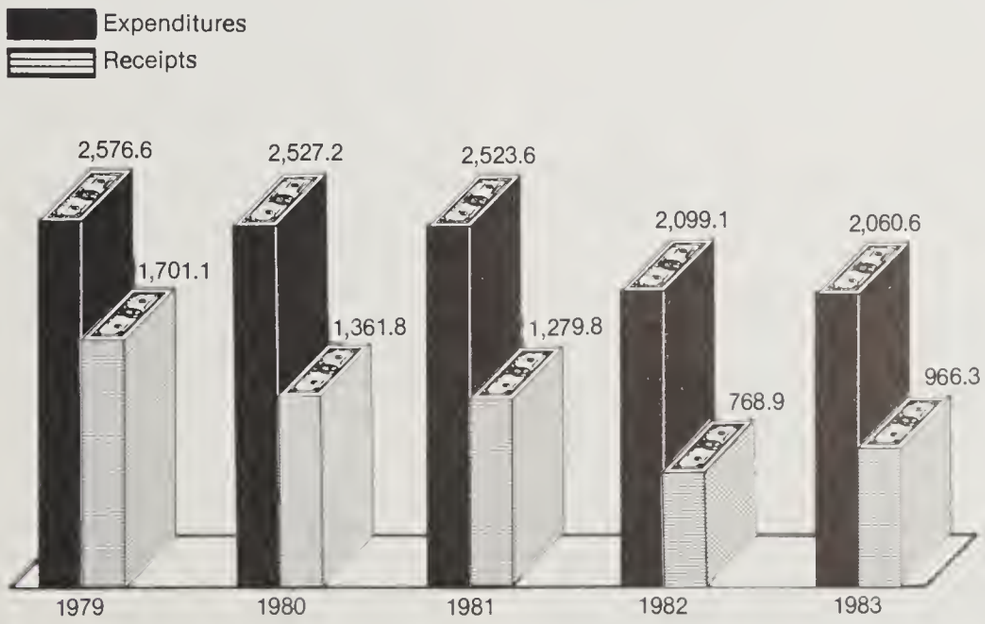
Receipts for fiscal year 1983 totaled $966.3 million, up from $768.9 million in 1982 ($730.2 in current dollars). This 25 percent increase can be attributed to a rise in demand for wood products. Expenditures totaled $2.06 billion compared to $2.1 billion in 1982 ($1.99 billion in current dollars (figure 1). All expenditure/receipt comparisons in this year's report are in constant 1983 dollars.

Timber receipts in the form of cash, deposits, and roads in lieu of cash accounted for 77 percent, or $748 million, of the total agency revenue in 1983. Receipts from mineral leases, royalties, sales, and bonus bids were the second largest source of revenue at 14 percent, or $133 million. Other sources included recreation fees, land use permits, grazing fees, and royalties from the sale of Smokey Bear and Woodsy Owl products (figure 2).

Managing the National Forest System in 1983 required 83 percent of all Forest Service expenditures. Forest Research spent 6 percent, Human Resource Programs 3.5 percent, and State and Private Forestry 3.5 percent of the budget. Working Capital Fund, used to replace vehicles and heavy equipment, amounted to 4 percent of expenditures (figure 3).

Figure 1

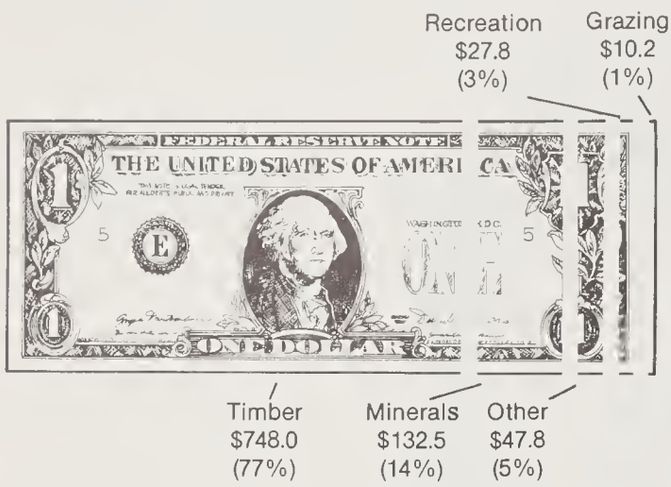
Expenditures and Receipts[1]
(Million Constant 1983 Dollars)



[1]See table 3 footnotes

Figure 2

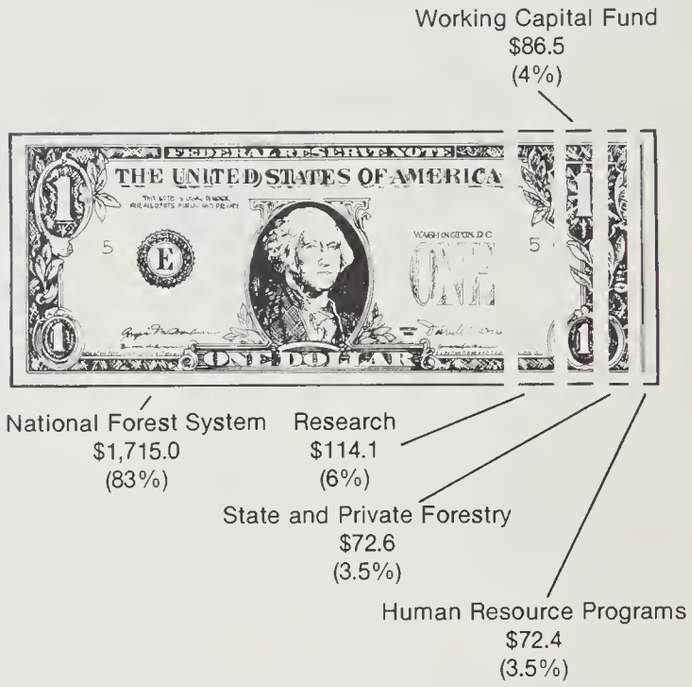
Distribution of Receipts by Program
(Million Dollars)



Total 1983 receipts—$966.3 million

Figure 3

Distribution of Expenditures by Program Area
(Million Dollars)



Total 1983 expenditures—$2,060.6 million

The Forest Service, as required by law, pays the States 25 percent of the National Forest receipts. These funds are to be used for public schools and roads in counties containing National Forest System lands. In fiscal year 1983 the Forest Service paid $132.6 million to the States from money received from National Forests in fiscal year 1982. In addition, a total of $10.3 million was paid to counties from National Grasslands and Land Utilization projects receipts from calendar year 1982. Arizona also received $15,621 and Minnesota received $711,025 under other statutes.

Collection of Overdue Debts

Nearly $2 million in interest was collected on delinquent debts in fiscal year 1983, compared to about $250,000 in fiscal year 1982.

A major accomplishment this year was awarding a contract for commercial collection services for assistance in collecting money owed the Government. The contract, which was made possible by the Debt Collection Act of 1982, is a 1-year pilot test in the Pacific Northwest Region. The results will determine the potential for servicewide contracting in the future.

Figure 4 compares the total accounts receivable from the public, the amounts overdue, and the amounts written off as uncollectable for the last 5 years. The total outstanding debts and delinquencies increased by 39 percent from 1982 to 1983. This sharp increase reflects a continued decline in the timber industry as a result of a very low housing market.

Personnel

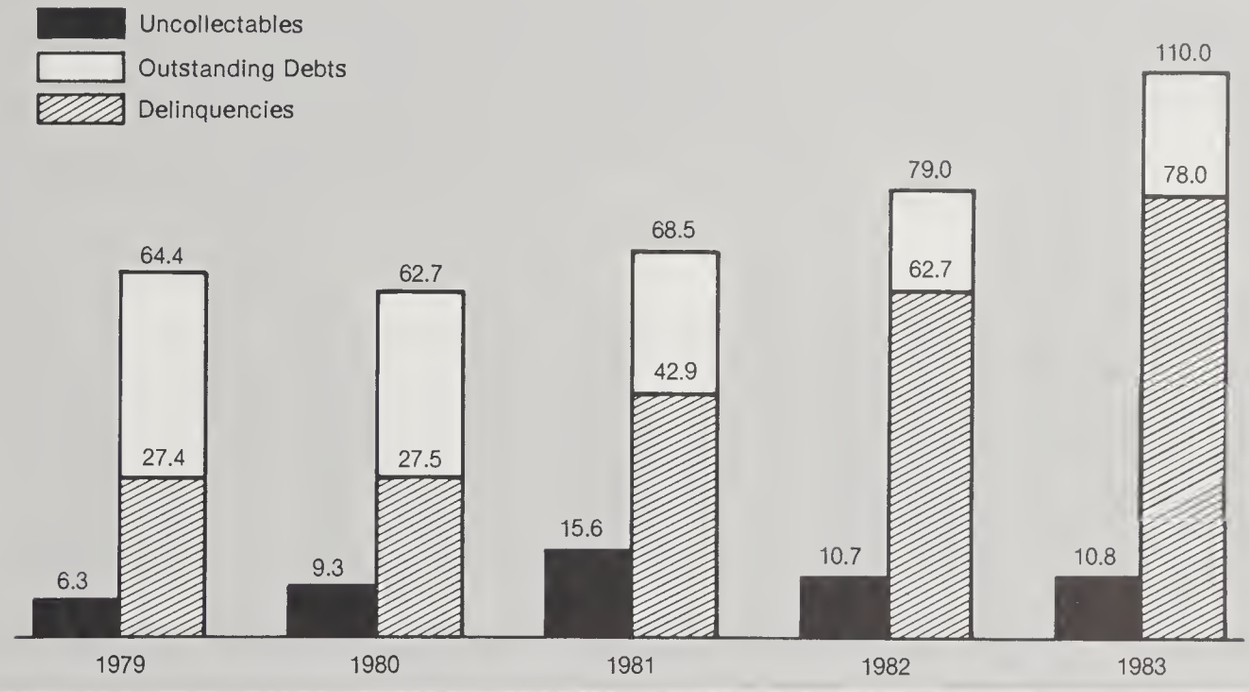
The number of Forest Service employees has steadily declined over the past 3 years, the result of a conscious effort by the Administration to reduce the Federal work force. Peak employment has fallen from 61,279 in July 1980 to 50,976 in 1983 (figure 5). A similar comparison using full-time equivalent data shows a drop of 1,134 FTE's to 41,850. This includes 30,702 permanent and 11,148 other FTE's. Employment opportunities within the agency are extremely limited at the present time.

The agency's work force remains heavily concentrated in the National Forest System, which employs 93 percent of the employees, an increase of 1 percent over the last year. Research has 6 percent and State and Private Forestry has less than 1 percent of the work force (figure 6).

Fifty-seven percent of the employees (26,833) fill technical positions; a large portion of these are forestry and engineering technicians. Professional employees are the second highest category of employees, totaling 11,348, which is 24 percent of the work force. Foresters and civil engineers remain the largest professional groups in the Forest Service.

Figure 4

Delinquencies, Uncollectables and Outstanding Debts
(As of September 30 of Selected Years)
(Million Dollars)



JOBS BILL

In the spring of 1983, the Forest Service was appropriated $85 million to create employment while accomplishing needed work in the maintenance of roads, trails and facilities, site preparation for reforestation, timber stand improvement, and recreation construction.

The $15 million provided for work related to reforestation resulted in about 67,000 acres of site preparation, of which 53,000 were for future planting. Twenty million dollars provided for timber stand improvement work resulted in 158,000 acres of accomplishment.

The appropriation included $25 million for reconstruction and replacement of deteriorating recreation facilities on National Forest System lands. This appropriation is available until expended. In fiscal year 1983, 25 percent of the funds were committed, with contracts pending for the other 75 percent. Many projects are complete. Delays were caused by the necessity to do survey and design on many of the projects, particularly the larger ones. It is estimated that the jobs bill was responsible for creating more than 7,500 jobs.

Estimate of Jobs Created

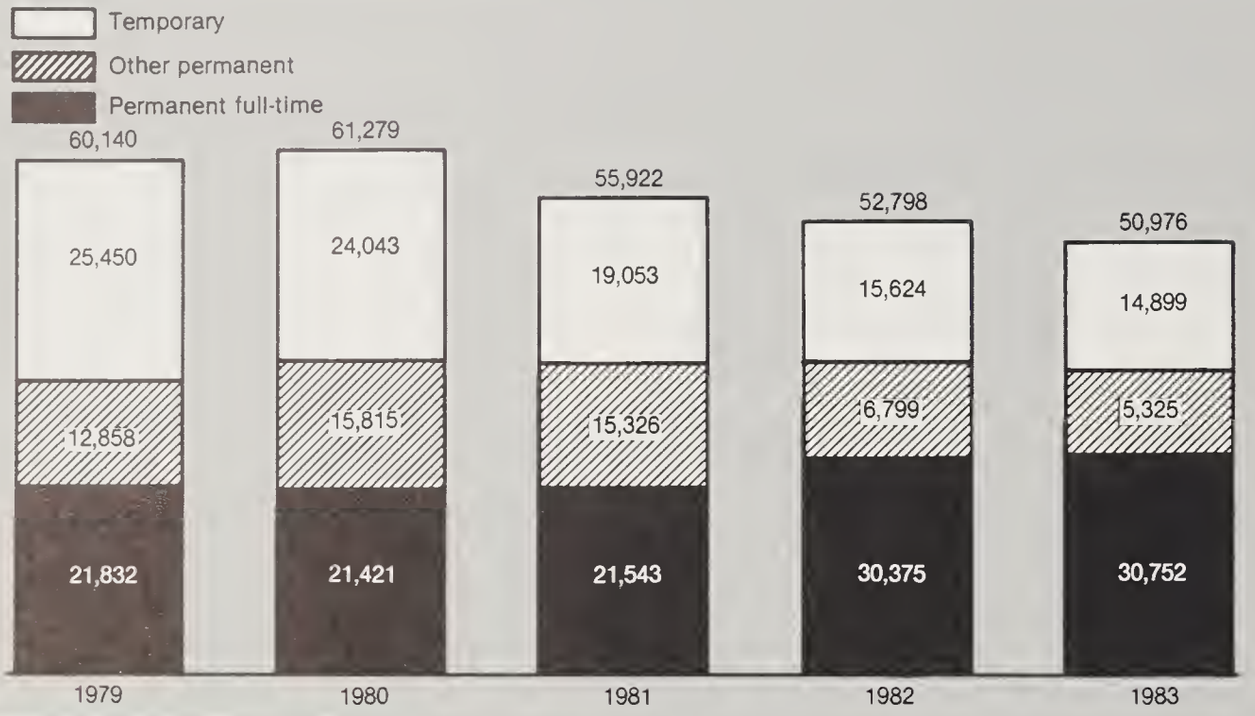
Activity	Jobs
Road Maintenance	2,357
Trail Maintenance	685
Facility Maintenance	1,115
Site Preparation	1,230
Timber Stand Improvement	2,055
Recreation Const.	not available

INFORMATION MANAGEMENT

The Forest Service is implementing a system of distributed information processing throughout the agency in order to improve the productivity of professional and clerical staff. Called Forest Level Information Processing System (FLIPS), it will integrate word processing, data processing, and telecommunications. Installation of the system will mark the first time significant data processing and information handling capabilities will be available at the field level. It will allow the Forest Service to provide more timely,

Figure 5

Distribution of Work Force by Tour of Duty
(Number of Employees as Reported in July)



accurate, and comprehensive information for both internal and public use. The Forest Service plans to install about 920 systems by the end of fiscal year 1986. Data General Corporation is the vendor.

The system is expected to increase productivity of the work force with no additional personnel ceilings because operational skills and application programs can be transported from unit to unit without retraining personnel or converting to different equipment, and to change the manner in which many administrative tasks are carried out. With all these potential changes in mind, the Chief chartered a national team to examine how the agency could manage this new technology.

During work sessions throughout the year, the team identified a series of issues that merit study. They include management and leadership requirements for implementing distributed information processing, needs for managing the development of automated systems, and the relationship of national to local systems.

The final report is scheduled for completion in early 1984. Results from this effort, combined with the new distributed information technology, will allow the Forest Service to manage its information resources better.

PRODUCTIVITY IMPROVEMENT

Four productivity improvement teams were assigned the objective of improving productivity and reducing

Figure 6

Distribution of Work Force by Program Area
(Number of Employees as of September 30, 1983)

National Forest System[1]	43,838	(93%)
Forest Research	3,094	(6%)
State and Private Forestry	231	(1%)

[1]Includes Office of Information, Programs and Legislation and Administration

expenditures in four high-cost areas. These areas included: reforestation, timber sales procedures, technological innovation, and contracting/procurement processes. Each team consisted of six or seven members selected servicewide, either for their expertise in the program studied or their experience as a line officer. Each team had approximately 6 months to complete a study of its assigned area and make recommendations on ways to reduce costs.

All four studies have been completed, and have produced recommendations that, if fully implemented, could result in budget savings and revenue increases of $74.5 million annually in the programs studied. Since some actions require legislation, accomplishment is not completely under Forest Service control.

Four studies were also conducted in fiscal year 1982 and the recommendations of these teams are now being implemented.

REORGANIZATION AND CONSOLIDATION

As part of the continuing effort to streamline the organization, a number of actions were initiated to reduce administrative costs through consolidations, co-locations of units, and the sharing of common skills and other resources among units.

The most significant such efforts include: Combining of support services of the Pacific Northwest Regional Office and Research Station in Portland, Oregon; the Intermountain Regional Office and Research Station in Ogden, Utah; and the Arapaho and Roosevelt National Forests of the Rocky Mountain Region with the Research Station in Fort Collins, Colorado, which were also colocated. Two ranger districts were eliminated through consolidations.

The combined estimated annual savings of the above actions approach $1.5 million; 41 permanent positions were eliminated. Many smaller scale efforts to carry out similar management improvements are continuing.

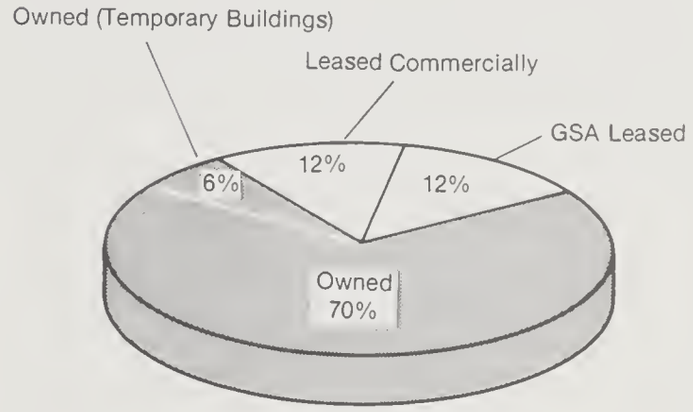
FACILITIES CONDITION

Because of the diverse geographic nature of Forest Service activities, a large number of building facilities are needed to manage these activities effectively. More than 19 million square feet of owned and leased facilities support the agency's various programs in the National Forest System, Research, and State and Private Forestry. A major portion of the facilities (76 percent) is owned by the Forest Service. The breakdown between owned and leased is shown in figure 7.

Most Forest Service facilities were constructed with a life expectancy of 30-35 years, and more than half are structurally and functionally beyond their useful lives.

Figure 7

Facilities Owned and Leased



As buildings age, more expensive maintenance is needed. Historically, funding for facilities has been less than 1 percent of replacement value. This has resulted in rapidly rising maintenance needs and the accumulation of necessary maintenance tasks.

HUMAN RESOURCE PROGRAMS

The goal of the Human Resource Program is to blend human and natural resources. These programs provide job opportunities and training for youth, the elderly, and others while they carry out high, priority conservation work. During fiscal year 1983, $74.6 million was appropriated to the Forest Service or transferred from the Department of Labor to operate three major programs: Job Corps, Senior Community Service Employment Program, and Youth Conservation Corps. The agency also administered several unfunded programs: Volunteers in the National Forests and various programs in which the Forest Service acts as a host agency.

The three major programs and the unfunded programs provided employment and skills training to 67,200 persons during the year. The work accomplished by these programs was valued at $80.9 million. Major accomplishments were campground and trail construction, tree planting, fence building, firefighting, timber stand improvement, clerical support, and construction of office buildings, warehouses, and roads.

Volunteers in the National Forests

The volunteers program, authorized by P.L. 92-300 as amended, offers individuals of all walks of life the opportunity to donate their services to assist in the management of the Nation's natural resources. This program continues to grow in popularity as Forest Service program managers see the potential benefits of utilizing volunteers to help carry out agency objectives.

In fiscal year 1983, more emphasis was put on increasing the average length of stay of volunteers to improve the overall quality of the program. The volunteers program attracted 44,200 participants. They contributed 1,700 person-years of work valued at approximately $21 million to this unfunded program.

A special volunteer program called Touch America Project (TAP) was implemented for youth 14-17 years of age. TAP is a partnership of youth, businesses, communities, nonprofit organizations, and governmental bodies administering public lands. This pilot program provided work experience for approximately 1,000 participants during the fiscal year. Young persons performed various conservation activities on 20 different projects.

Some of the projects are described here

- In cooperation with the University of Alabama, 20 youths completed an archaeological survey on the Bankhead National Forest and helped the university expand its collection of ancient artifacts.

- The Boys Club of Los Angeles sponsored a TAP project that involved Hispanic youth in the development and maintenance of mountain trails on the Angeles National Forest. A southern California utility company paid most of the expenses for the project, including transportation, equipment, special clothing, and food.

- Five projects were conducted on the Mark Twain National Forest under the sponsorship of the Future Farmers of America, the Cookson Hills Christian Home, Sheltered Workshops, Inc., the Boy Scouts of America, and Winona High School. Tools, materials, canoes, and other equipment used for the projects were donated by local businesses.

Figure 8. Volunteers helping maintain a Forest Service campground as part of the Touch America Project

Job Corps

The Job Corps is a Department of Labor program with 18 civilian conservation centers administered by the Forest Service under an interagency agreement.

A total of $54.4 million was received in fiscal year 1983 to serve 8,800 youths (59 percent minorities and 9 percent women). This resulted in $17.6 million worth of work accomplished through 3,900 person-years of on-the-job training.

Figure 9. Job Corps construction project on the Daniel Boone National Forest in Kentucky.

The main purpose of the centers is to produce graduates who are able to find productive work, reenter school, or join the military. In fiscal year 1983, 88 percent of Job Corps graduates entered into one of these three career steps.

Senior Community Service Employment Program

The Forest Service, in cooperation with the Department of Labor, sponsors the Senior Community Service Employment Program (SCSEP). It is authorized under Title V of the Older Americans Act.

A total of 5,107 persons were employed (21 percent minorities and 35 percent women) under the interagency agreement of July 1, 1982, to June 30, 1983, providing $16.8 million.

They did 2,200 person-years of work valued at $26 million, a return of $1.56 for each Government dollar invested. Between July 1, 1983, and June 30, 1984, it is anticipated that 5,600 seniors will be employed with funding of $21.1 million.

Youth Conservation Corps

The Youth Conservation Corps (YCC) is a summer employment program for persons 15 through 18. They worked, learned, and earned together by doing projects that develop and conserve natural resources.

The total costs were $3.4 million. About 2,400 young persons (16 percent minorities and 47 percent women) accomplished about 400 person-years of work valued at $4.8 million, a $1.41 return for each dollar invested.

Hosted Programs

The Forest Service serves as a host for cooperative programs administered by State and local governments. This includes college work study, vocational work study, work incentive, and other programs. During fiscal year 1983, 6,700 persons participated, accomplishing 900 person-years of conservation work worth $11.2 million.

Figure 10. Older American employed under the Senior Community Service Employment Program to assist with office work.

National Forest System

INTRODUCTION

The Forest Service manages and protects 191 million acres of National Forest System (NFS) land, 87 percent of which are in the Western United States (figure 11).

The natural resources on these lands are among the Nation's greatest assets. How these resources are used and protected affects the economic, environmental, and social well-being of every citizen. Renewable resources including recreational opportunities, forage, wood, wilderness, wildlife and fish habitat, and water are the products of the National Forests. Nonrenewable resources such as oil, gas, coal, and hardrock minerals are also produced.

Funded targets for fiscal year 1983 have been met or exceeded in most cases. Tables 10 and 11 show the percentages of accomplishment and funding. Discussions of key activities, outputs, and other program information follow.

Figure 11

LAND MANAGEMENT PLANNING

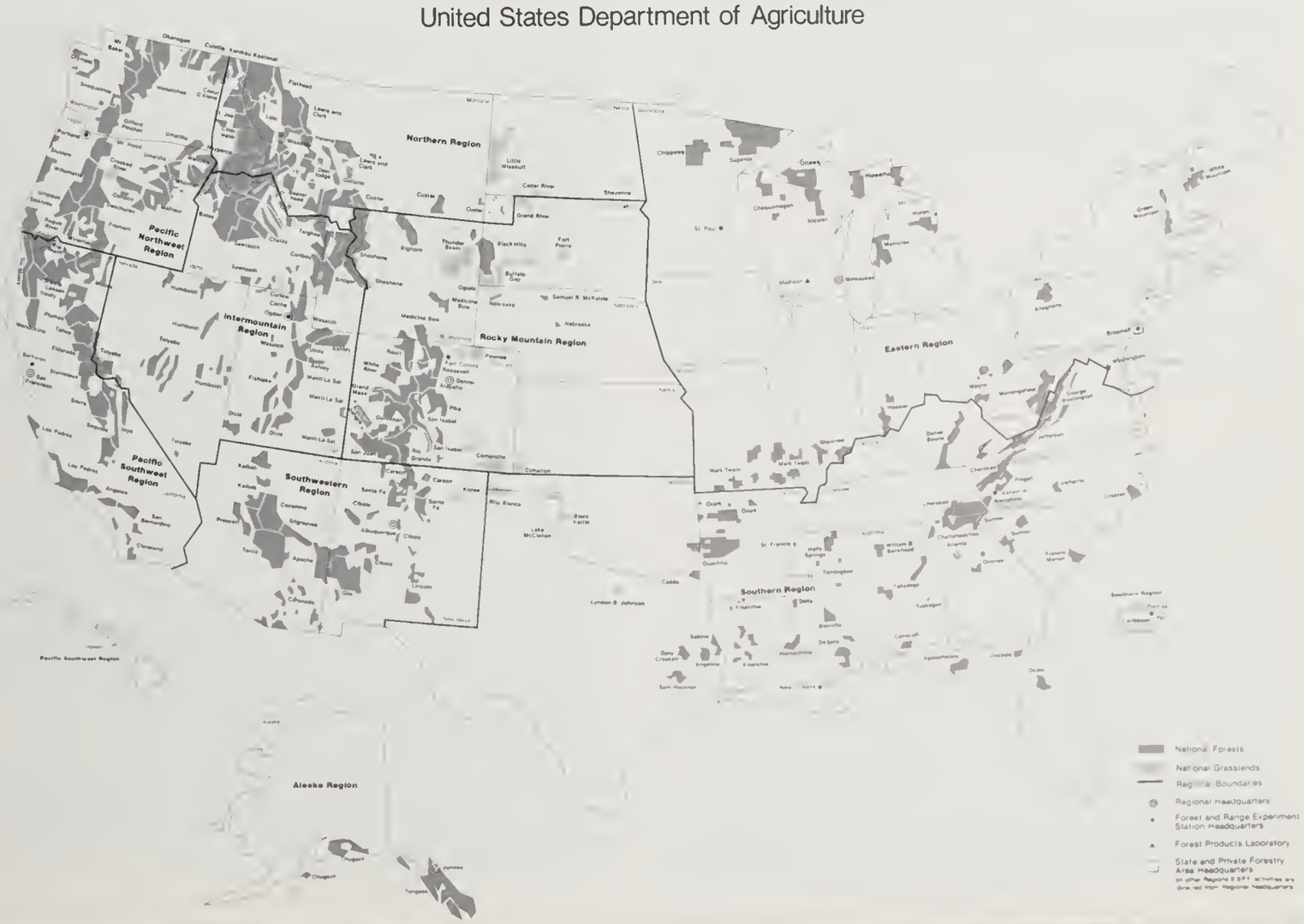
Planning Process

The National Forest Management Act (NFMA) of 1976 directed the Secretary of Agriculture to develop a land and resource management plan for each administrative unit of the National Forest System by September 30, 1985. Regulations were developed in 1979 to guide this effort. They require integrated planning for all resources, including recreation, fish and wildlife habitat, water, timber, range, and wilderness.

At the direction of the Presidential Task Force on Regulatory Relief, the regulations were revised to streamline the planning process and better direct it towards achieving maximum benefits from NFS lands. The final rules became effective November 1, 1982.

Additional revision was required in 1983 in response to a court decision that the 1979 Roadless Area Review and Evaluation (RARE II) environmental statement and associated procedures were inadequate under the

The Forest Service
United States Department of Agriculture



National Environmental Policy Act (NEPA). This revision mandates that the forest planning process reevaluate areas that remain essentially roadless and undeveloped and have not been designated by law as wilderness or for nonwilderness uses. This revision became effective October 7, 1983.

Status of Regional Guides

Regional guides establish standards and guidelines, reflect goals and objectives of the RPA Program, and display tentative resource objectives for each National Forest. The nine regional guides, replace regional plans. These were either published in final form during 1983 or approved for publication in early fiscal year 1984.

Status of Forest Plans

Under NFMA requirements, 121 administrative units must prepare forest plans. The plans are in various stages of development. Most have been delayed to accommodate reevaluation of roadless and undeveloped areas. As of October 1983, 20 draft and 4 final forest plans have been approved for filing with the Environmental Protection Agency. In addition, 16 draft forest plans had been approved for publication.

The status of Forest planning is displayed to the right by region. The display represents the draft and final Forest Plan Environmental Impact Statements filed with the Environmental Protection Agency by the Forest Service in fiscal year 1983.

Wilderness Legislation

Congress designated six areas containing 74,400 acres of additional wilderness during fiscal year 1983, in Indiana, Missouri, and West Virginia, with all bills containing statewide RARE II sufficiency and release language.

Inclusion of sufficiency language within the State bill removes the opportunity for judicial challenge of the RARE II recommendation within that particular State. The release language directs that those inventory areas not designated as either wilderness or wilderness study areas will be managed for uses other than wilderness.

The administration testified in support of 2.9 million acres of additional wilderness in 13 States. During the 97th Congress, 42 bills were introduced; 7 passed the House and 7 passed the Senate. The 98th Congress introduced 33 bills during the fiscal year, of which 5 passed the House and 3 passed the Senate.

Wild and Scenic Rivers

Congress designated no rivers on National Forest System lands for the Wild and Scenic Rivers System during 1983.

Twenty-seven rivers on National Forest lands, totaling 1,590 miles, have been designated Wild and Scenic Rivers. An additional 13 rivers have been studied and recommended to Congress for designation.

Three studies--on the Kern River in California, the Situk River in Alaska, and the Manistee River in Michigan--were completed during fiscal year 1983. Six congressionally designated river studies are currently in progress. Additional rivers are being studied in conjunction with the forest land management planning process.

Northern Region

Draft

Beaverhead (MT) 1/
Flathead (MT)
Kootenai (MT)
Lewis & Clark (MT) 1/
Lolo (revised draft) (MT) 1/

Rocky Mountain Region

Draft

Arapaho-Roosevelt (CO) 1/
Pike & San Isabel (CO)
Routt (CO)
Rio Grande (CO)
White River (CO)
Nebraska (NE) 1/

Final

Grand Mesa-Uncompahgre-Gunnison (CO)
San Juan (CO)
Black Hills (SD)

Southwestern Region

Draft

Coronado (AZ)
Tonto (AZ)

Final

Santa Fe (NM) 2/

Intermountain Region

Draft

Uinta (UT) 1/
Targhee (ID) 1/

Pacific Southwest Region

Draft

Klamath (CA)
Sierra (CA)

Pacific Northwest Region

Draft

Deschutes (OR)
Okanogan (WA) 1/

Alaska Region

Draft

Chugach (AK)

1/ Filed before fiscal year 1983
2/ Final filed in Oct. 1983.

RESOURCE PROTECTION

Minerals

More than 30,000 mineral cases were processed in fiscal year 1983, exceeding the 1983 RPA goal by 43 percent. These cases involve leasable, locatable, and common variety minerals. They include such activities as processing of new lease applications, completing validity examinations, processing prospecting permits, administering operating plans and work on reserved and outstanding rights.

Even with more minerals cases being submitted than anticipated, the number of cases remaining unprocessed at the end of the fiscal year decreased from 7,200 in 1982 to an estimated 4,400 in 1983.

Accomplishment exceeded the fiscal year 1983 funded program by 18 percent. A national goal of reducing dependence on imports of energy-producing materials, growing mineral needs, and uncertainty associated with some foreign supply sources has resulted in increased leasing and mining activities on National Forest System (NFS) lands.

The major role of the Forest Service in mineral and energy exploration and development is protecting and managing the affected surface resources. In addition, the agency cooperates with the Department of the Interior, primarily the Bureau of Land Management, which is responsible for the administration of the subsurface energy and mineral resources on all Federal lands. Where exploration, development, and production of these resources will significantly affect the environment, the Forest Service prepares environmental impact statements as required by law.

Figure 12. Oil drilling rig on the National Forests in Alabama.

Energy-producing resources found beneath NFS lands are oil, natural gas, coal, geothermal steam, and uranium. Minerals of strategic importance beneath NFS lands include chronium, nickel, tungsten, and molybdenum. Gold, copper, zinc, silver, and phosphate are also found in significant amounts.

Of the 4,400 unprocessed cases, there were 900 lease applications in congressionally designated wildernesses, 300 in wilderness study areas, 700 in RARE II recommended wilderness areas, and 500 in RARE II further planning areas. In response to congressional direction in the fiscal year 1983 Appropriations Act, none of these applications were processed.

The tasks of processing and administering operating plans increased in 1983. Administrative activities associated with these plans involve protection of renewable resources, transportation planning and monitoring of land reclamation. Increased administration—more expensive than processing applications—has been a key factor in the 18 percent-increase over 1982 in the cost of minerals management.

Receipts

In 1983 receipts from rents, royalties, sales, and bonus bids for minerals are relatively unchanged in constant dollar terms, but show a slight increase in actual dollars. The increase may be attributed to many factors, including increased natural gas prices and more acreage under lease. These receipts totaled an estimated $132.5 million (figure 14).

Lands

Land Exchange Program

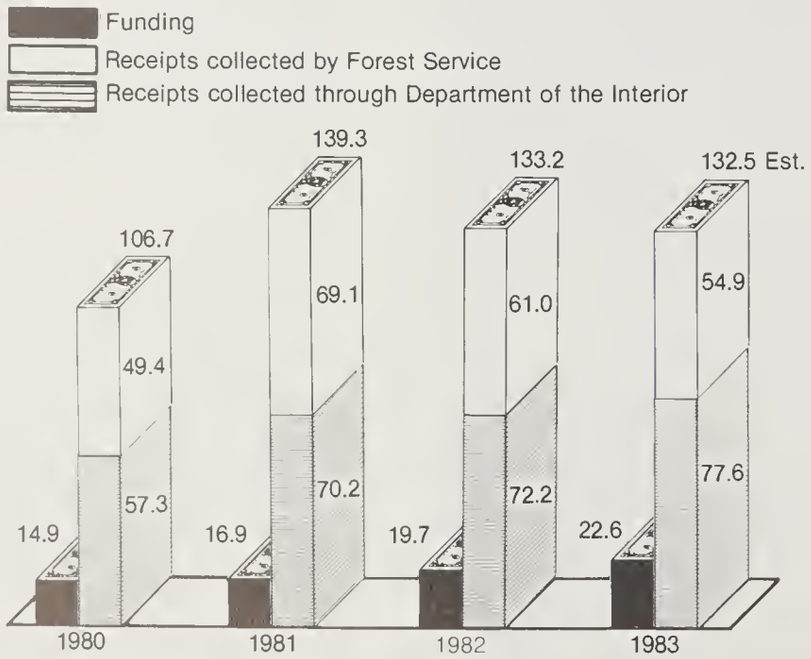
Land exchanges are carried out primarily to reduce the cost or improve the effectiveness of resource management. In 1983, 118,600 acres of non-Federal land were acquired in exchange for 80,500 acres of NFS land (figure 15). This was 135 percent of the 87,900-acre goal. These exchanges consolidated National Forest land, easing the task of controlling access and administering various resource programs. National Forest property lines were reduced by more than 1,200 miles. This will mean a savings of $6.5 million in future landline location costs. The cost of the exchange work was $6.2 million. Additional savings will result from elimination of future trespass cases, fewer special use permits, and fewer rights-of-way, cases.

Figure 13. An oil producing site reclaimed for the protection of surface resources and values.

Figure 14

Minerals—Funding and Receipts[1]

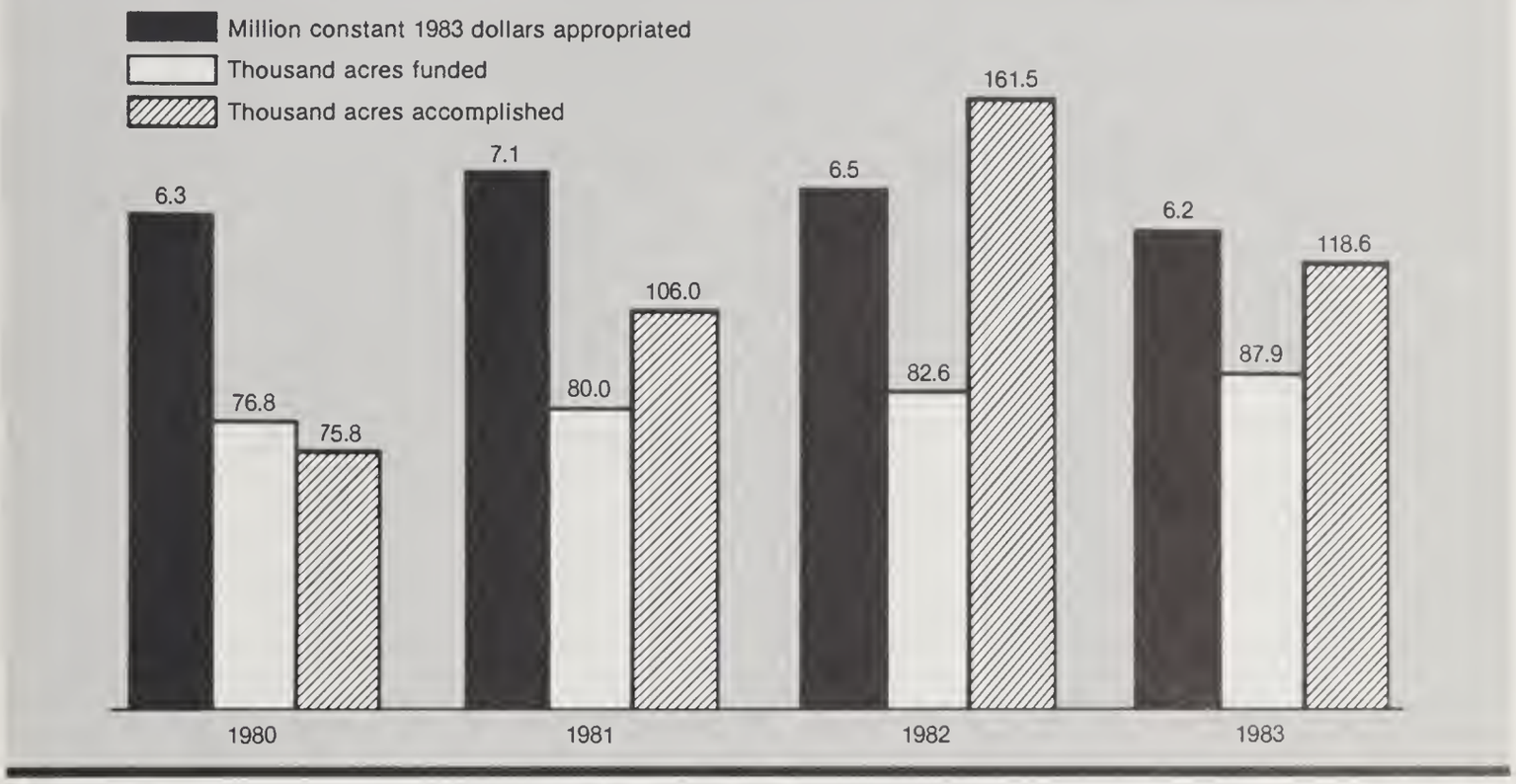
(Million Constant 1983 Dollars)



[1] See table 3, footnote 5

Figure 15

Land Exchange—Funding and Accomplishment



These land exchanges resulted in the acquisition of many acres of non-Federal land within classified Wilderness areas, National Recreation Areas, Wild and Scenic Rivers, National Trails, and other congressionally designated areas. In these cases, exchanges were deemed cost-effective alternatives to purchase. Non-Federal landowners paid $243,800 in cash equalization payments and the United States paid $85,100. The total amount ($382,900) was 0.1 percent of the appraised value, well within the 25 percent allowed by the Federal Land Policy and Management Act.

Land Purchase and Donations

Several laws authorize the Forest Service to acquire land and water for a variety of purposes, including cost reductions in resource management.

The Forest Service purchased 8,700 acres with money provided by the Land and Water Conservation Fund, Receipts Acts, and Sisk Act approprations. In addition, 11 landowners donated 21,100 acres of mineral interests plus about 600 acres of surface estate.

Landline Location

Landlines are located to identify the legal boundaries between NFS lands and other lands so that activities (timber sales, for example) can be carried out to fully utilize National Forest resources without risk of trespass.

In 1983, $25 million was appropriated to locate about 5,400 miles of property boundaries. A total of 6,100 miles was located, 12 percent more than the target (figure 16). Accomplishments exceeded targets in 1983 primarily because of efficiencies gained through contracting to the private sector.

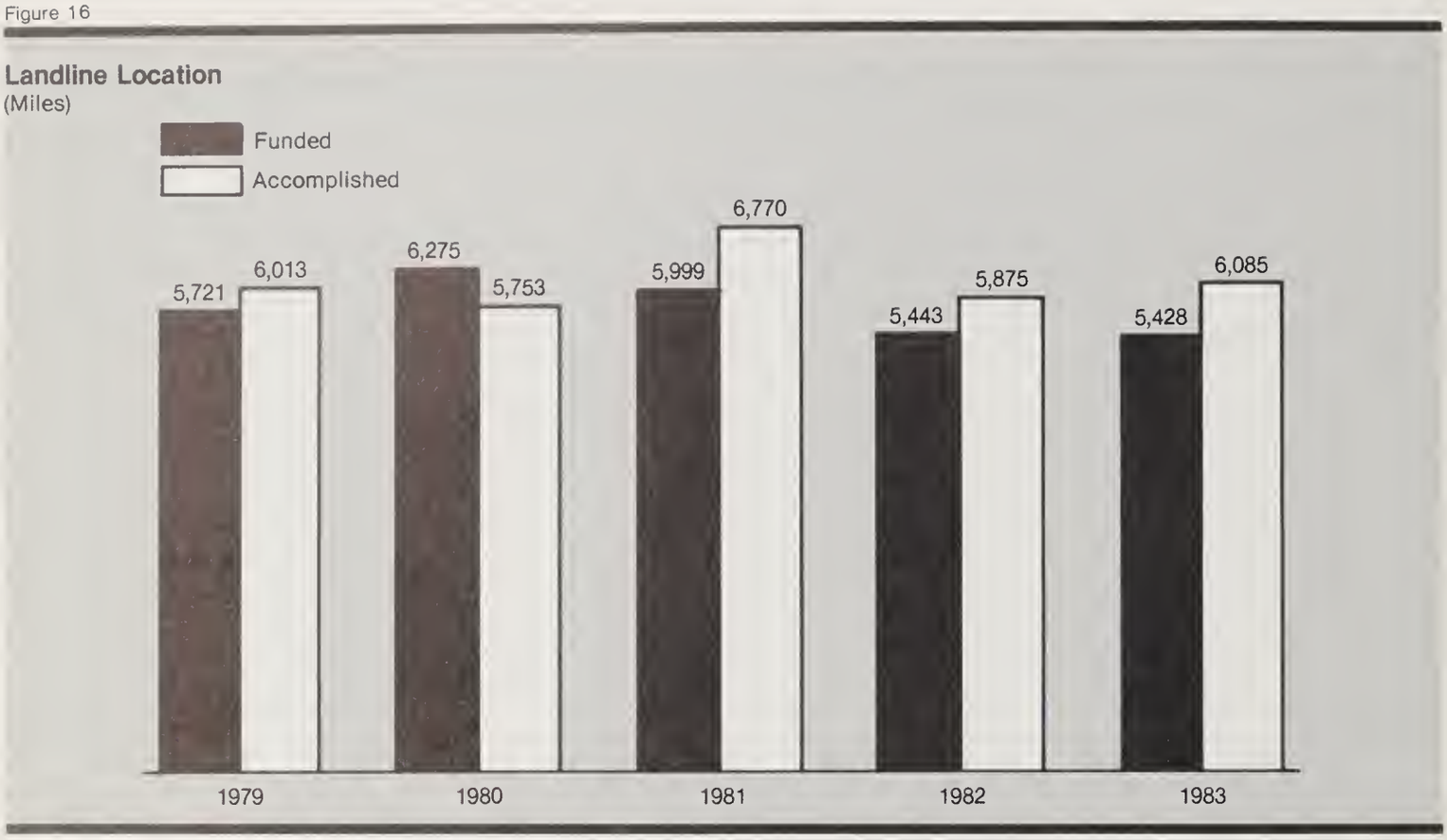
Small Tracts Act

The Small Tracts Act (P.L. 97-465), enacted January 12, 1983, authorizes the Secretary of Agriculture to sell or exchange small parcels of National Forest System land. Included are unmanageable parcels of various sizes and shapes located between mineral patents, and small parcels innocently occupied. Processing cases under this authority is scheduled to begin in February 1984 when regulations to implement the act are final.

Protection

Fiscal year 1983 weather patterns and fire statistics resembled 1982 in the West, but the eastern half of the United States experienced a severe drought, resulting in unusual wildfire activity during the normally wet summer months.

Figure 16



Nationally, fewer acres were burned by wildfire in 1983 than at any time in the last decade. Heavy snows and rains fell throughout the fall, winter, and spring in most of the Western United States. The above-average precipitation resulted in extensive flooding in the West, especially in Utah. Although forest fuels in the western United States began drying out, soil moisture content did not reach critically low levels. Upper elevation brush and timber lands never reached critical fuel moisture stages that support free-running wildfires.

PERIOD	NO. OF DETECTED WILDFIRES			ACRES BURNED
	Lightning	Person caused	Total	
1978-82	5,011	6,030	11,041	208,352 1/
1983	3,170	3,483	6,653	51,295

1/ Totals are annual averages.

International coordination of fire management activities was a high priority in 1983. Forest Service personnel participated in international activities including the following:

1) Assistance to Portugal in improving use of fire control equipment and training in fire prevention.
2) Assistance to the Dominican Republic in suppression of a large wildfire.
3) Conducting a 3-week, advanced wildland fire training course which was specifically designed for participants from 20 Spanish speaking countries and was taught completely in Spanish by instructors from the Forest Service, and other Federal and State agencies.
4) Training and providing on site assistance in use of the Modular Airbourne Firefighting System (MAFFS) for Australia, Italy, Portugal and the Hellenic Republic.
5) Infrared mapping of wildfires in Canada.

Fuel Management

Fuel management targets were exceeded by 18 percent. This can be credited to the unusual precipitation in the West, which freed crews from firefighting activities and provided most National Forests an opportunity to continue their work in fuel management and prescribed burning throughout most of the summer.

Insects and Diseases

Application of pest prevention and suppression principles through land and resource management activities effectively reduces pest-caused resource damage.

Figure 17. Helicopter, with helitorch devise attached, igniting a prescribed fire in the rugged terrain of the Angeles National Forest (California). This devise has significantly reduced the cost of using prescribed fire to manipulate forest fuels.

National Forest System resource management plans are being prepared to project forest pest outbreaks, to estimate potential damage, and to plan appropriate management actions.

Major National Forest System pest management accomplishments beyond those realized through regular forest management activities are:

Detection and evaluation (acres) 112,000,000
Prevention/suppression (acres) 1,230,000

A more detailed discussion of forest pest management is included on pages 40 and 41.

Law Enforcement

Forest Service responsibility for law enforcement is directed at protecting natural resources, Federal property, and employees on the National Forests. Timber theft prevention and investigation were important activities during the year. The number of reported sawtimber thefts continued to decrease, a trend established in 1982. However, increased demand for fuelwood was reflected in an increase in the illegal removal of National Forest timber for fuelwood. Another major area of work was an increase in investigations of theft from and destruction of archeological sites.

Figure 18. Aerial photograph of cannabis cultivation on National Forest land. Cannabis is interspersed with young timber in clearing.

In 1983, the Forest Service cooperated with the U.S. Department of the Treasury at the Federal Law Enforcement Training Center (FLETC) to increase the effectiveness of law enforcement training. Among their cooperative accomplishments was refining a course on investigations designed to protect archeological sites.

During 1983, the Forest Service further strengthened relationships with the Federal Drug Enforcement Administrtion (DEA), U.S. Department of Justice, and State and local law enforcement agencies responsible for investigation of cannabis cultivation on the National Forests. Through interagency cooperation and coordination, substantial progress was made in eradicating this illegal crop, particularly in California, Oregon, and the Southeast. Preliminary data indicates a reduction from about 6,000 illicit cannabis operations (1982) to about 5,700 (1983). This is the first reversal of a trend dating back to 1979.

The major concern related to cannabis is the risk to National Forest visitors, contractors, and Forest Service employees when they encounter those who are tending and/or guarding these lucrative crops. Reducing the use of the National Forests for cannabis production is essential in maintaining a safe environment for any citizen on a National Forest.

The Cooperative Law Enforcement Program is designed to compensate local law enforcement agencies for protecting visitors and their property on the National

Figure 19. Close-up view of mature cannabis plants being mechanically eradicated.

Forests. During 1983, reimbursable agreements were in effect with 376 State and local law enforcement agencies. This compares with 300 agreements in 1982. Funding was concentrated where large numbers of visitors must receive their principal protection from relatively small, often under staffed, local law enforcement agencies. Substantial reductions in the rate of theft and crime have been achieved in locations where this program increased the law enforcement presence.

RESOURCE MANAGEMENT

Timber

Program Overview

Timber on National Forest System lands is managed to produce a continuous supply of wood products to serve America's demands. Logs for lumber and plywood, pulpwood for paper, fuelwood, posts and poles, and Christmas trees are a few of the main products of the National Forest timber resource.

National forests have the largest supply of standing sawtimber in the Nation, estimated at nearly 1.1 trillion board feet. This is about 41 percent of the national total. Nonindustrial private forest lands account for 33 percent of the total, private industry has 15 percent, and other lands have 11 percent.

National Forests annually provide about 20 percent of the total timber harvested in the United States. This compares to about 30 percent from lands owned by the forest industry and 50 percent from other private lands.

Accomplishments for the three major timber management programs in relation to fiscal year 1983 targets were: 103 percent for timber offered, 100 percent for appropriated reforestation, and 105 percent for appropriated timber stand improvement (TSI). Jobs bill funding and accomplishments are not included in these percentages. Discussion of this is on page 7.

Accomplishments in comparison with the long-term RPA timber management goals were: 93 percent for timber offered, 108 percent for appropriated reforestation, and 100 percent for appropriated TSI.

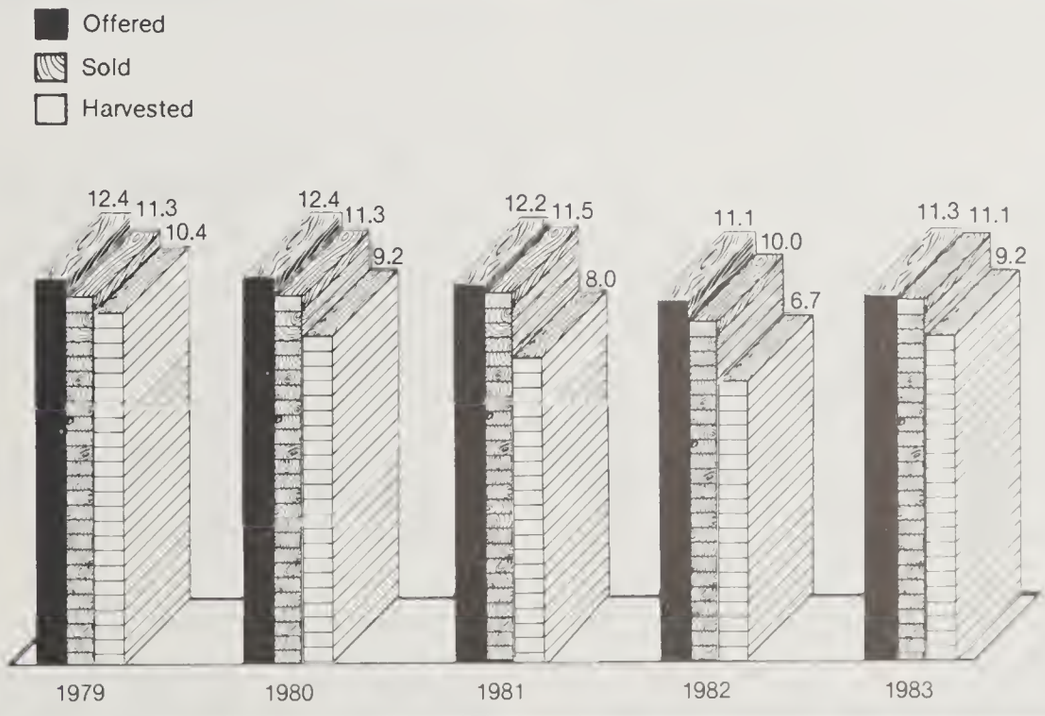
Demand in 1983

Sales of timber products in the United States increased fairly rapidly through the first half of 1983, with new housing showing a strong upsurge in the first 8 months. New housing accounts for more than a third of the total annual consumption of softwood lumber and plywood, and for substantial amounts of the other major timber products.

In August, housing starts reached a seasonally adjusted annual rate of 1.9 million, up 6 percent from July, and the highest monthly level in more than 4 years. In September, starts declined sharply. Apparently in

Figure 20

Timber Offered, Sold and Harvested
(Billion Board Feet)



response to increasing interest rates in the summer and to lagging sales in August, September starts dropped to a seasonally adjusted rate of 1.7 million, 13.4 percent below August, and the lowest rate since April 1983. The rate recovered somewhat in October and November.

In contrast to housing, nonresidential construction activity declined sharply through the first 4 months of 1983. Thereafter, there was an improvement with a 10-percent increase in the seasonally adjusted annual rate of expenditures. Third quarter expenditures were strong.

The United States is the world's leading importer of timber products—chiefly lumber, wood pulp, paper and board from Canada, and veneer and plywood from southeast Asia. The total value of these imports in 1982 was about $8.4 billion, 3.3 percent of the value of all U.S. imports. It is estimated that more than a fifth of this country's timber products has been imported in recent years.

The United States is also a major timber products exporter. In 1982, the total value of timber product exports was $7.2 billion—about 3.5 percent of the Nation's exports. Although the United States ships a variety of wood products to many countries, the principal export markets are Japan for softwood logs and lumber, pulp chips, wood pulp, and paper and board products; and western Europe for wood pulp, paper and board products, lumber, and plywood.

International demand for many U.S. timber products had been generally rising in the late 1970's but began to decline in 1980 as economic growth slowed in major overseas markets. These trends continued through mid-1983. Particularly important has been the long slump in Japanese housing, the principal market for most of the softwood logs and lumber from the United States. On the whole, international trade was somewhat improved for most products in 1983.

Timber Sale Preparation, Offer, and Harvest

In order to be responsive to market demands now and in the future, the Forest Service was funded by Congress in fiscal year 1983 to prepare and offer 11.0 billion board feet of timber. A total of 11.3 billion board feet were prepared and offered, and 11.1 billion board feet were sold. (figures 20 and 21a). This includes approximately 0.8 billion board feet of small miscellaneous sales offered in previous years that were re-offered and sold in fiscal year 1983. The value of timber sold was $774 million. This compares to fiscal year 1982 sales of 10 billion board feet that sold for $614 million.

The average bid for timber in fiscal year 1983 was $70 per thousand board feet. This compares with $61 in 1982, $154 in 1981, and $172 in 1980.

As in 1982, sale sizes were small and of short duration in order to give industry opportunities to meet current market situations. The cost per thousand board feet to prepare and administer timber sales did not increase between 1982 and 1983. In fiscal year 1983, harvest volume totaled 9.2 billion board feet, compared to 6.7 billion board feet in 1982. Value of timber harvest was $650 million for 1983, compared to $340 million in 1982.

The uncut volume under contract continues to increase and is at 37.8 billion board feet, compared to 36.1 billion board feet in 1982. Over half is located in the Pacific Northwest and does not include volume in long-term sales (figure 21b).

Early in 1982, the Forest Service initiated several measures to discourage purchasers from buying and holding large volumes of timber under contract. These were further reinforced in 1983 by raising the advance cash deposit required of the successful bidder from 5 percent to 10 percent of the bid value. While the effectiveness of these measures has not been fully evaluated, it appears they have reduced speculative bidding to some extent.

The large volume under contract arises from companies building inventories to guarantee a supply of raw material, and the unexpected drop in demand due to reduced housing starts. Some of this volume was bid at excessively high rates based on industry projections of increasing housing demands in the 1980's, and the uncertainty of the amount of National Forest timber available for future harvest.

In 1980 and 1981 the Forest Service granted extensions for 1 and 2 years to provide added time to harvest existing sales. These sales began to expire in 1983 and many will expire in 1984. Forest Service policy for further contract extensions of up to 5 years was implemented in December 1983.

Timber Sale Receipts

The 1983 receipts from timber purchasers totaled $595 million, compared to 1982 receipts of $384 million (figure 22). These receipts include returns to the Treasury and deposits retained for use in work done by the Forest Service on timber sale areas. They do not include the value of roads built by purchaser in lieu of cash or timber harvested that has not been scaled at sawmills.

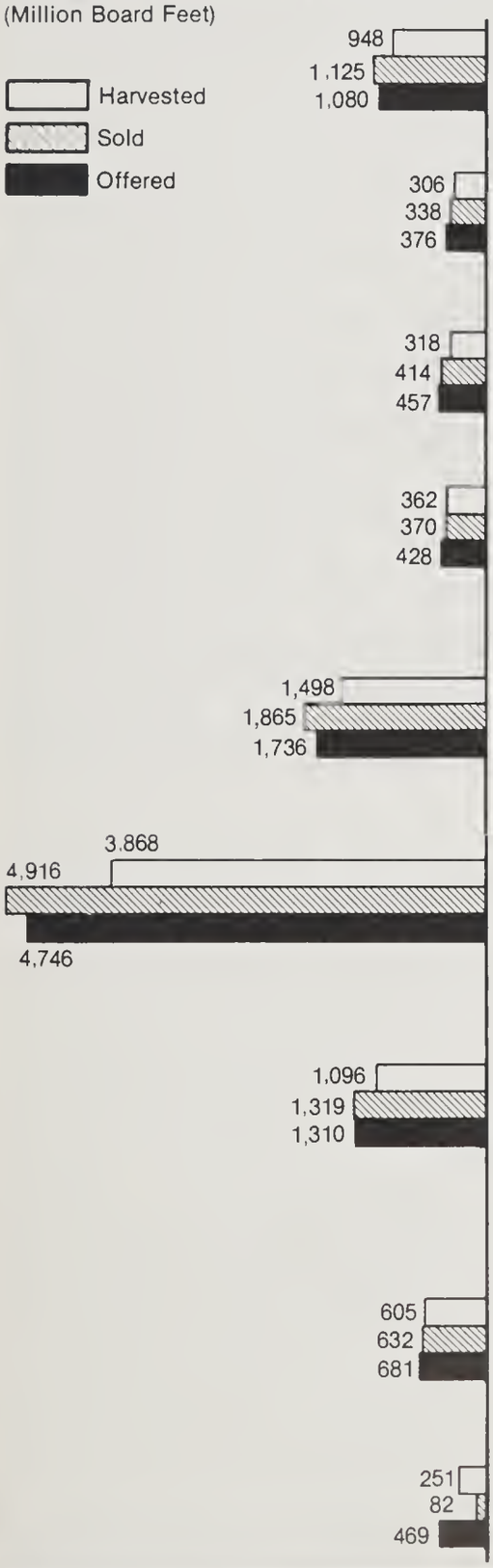
This compares to the long-term 1980 receipts projections developed through the Timber Assessment Market Model (TAMM) of $1.3 billion for fiscal year 1982 and $1.4 billion for fiscal year 1983.

Timber Sales Costs and Sold Values

Section 6 of the Resource Planning Act requires the identification of a representative sample of advertised timber sales sold below the estimated expenditures for

Figure 21a

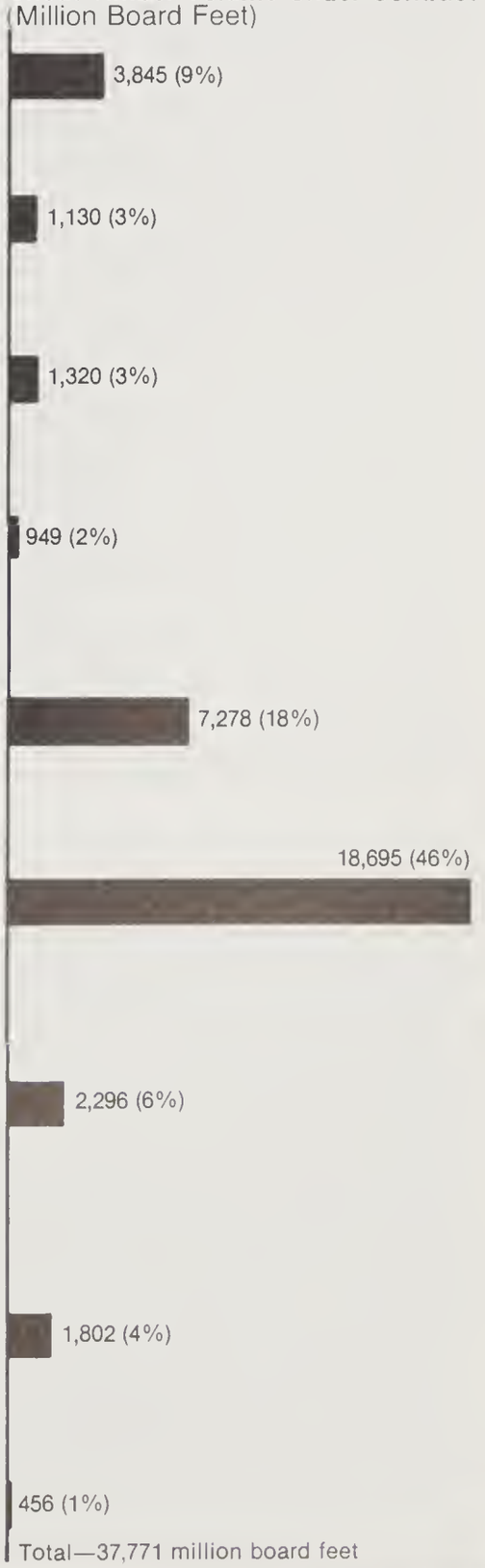
Timber Offered, Sold and Harvested
(Million Board Feet)



Region

Figure 21b

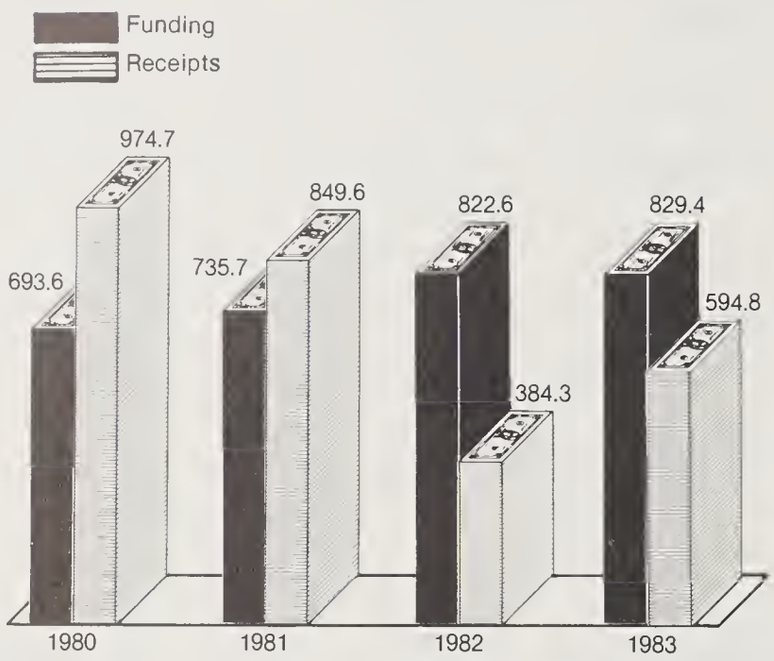
Uncut Timber Volume Under Contract
(Million Board Feet)



Total—37,771 million board feet

Figure 22

Timber Funding and Receipts[1]
(Million Constant 1983 Dollars)



[1]Exludes timber purchaser roads constructed by the Forest Service, see tables 24 and 25.

such sales (table 26 and figure 23). Nationally the value of timber volume sold exceeded the cost of the sales by 207 percent. About 63 percent of the sale volume sold in 1983 had a value greater than costs and 37 percent had a value less than costs. Both types of sales occur in all regions. In four regions, the total sales volume value is less than the sales costs.

Depending on the size, location, and complexity of a timber sale, Government costs for preparation and administration may be incurred over a period spanning 1 to 10 or more years. Likewise, revenue to the Government from the harvest of the timber may span several years. Because of the complexity (over 235,000 sales in 1983) and expense, the Forest Service does not track expenditures by individual timber sales nor by specific cost centers. Funds are dispersed basically by the broad categories, timber sale preparation and timber sale administration. Expenditures are tracked in the accounting system by the same categories.

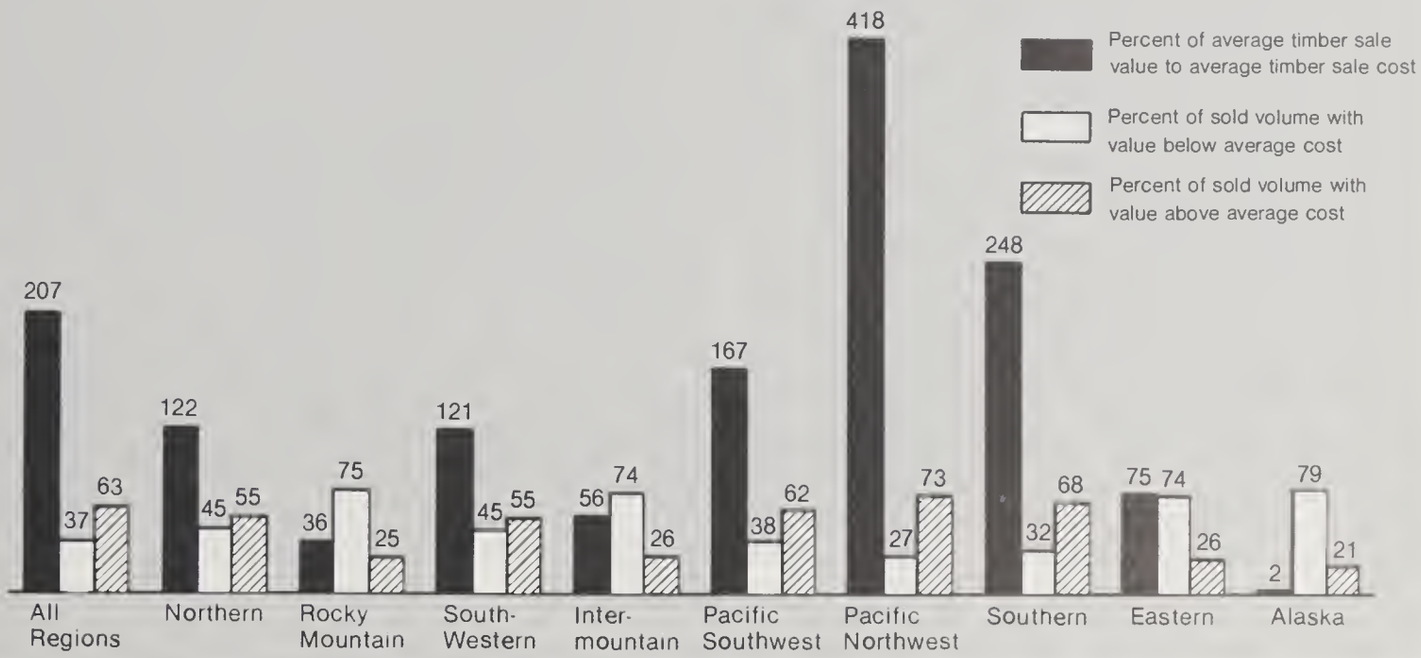
To produce continuous, relatively even-flow timber volumes for harvest requires that expenditures, investments, and revenues be broadly based, that is, spread over an extensive forested land area. Over the total forested area managed by the Forest Service, nature has endowed some areas with more favorable conditions, stands, and species of trees than other areas. In the earlier years of the management cycle this endowment affects the annual cost/value relationships. Even within the more favorable areas, there are stands and species which produce less favorable cost/value ratios in the earlier years of management.

Timber sale costs includes sale preparations and offer costs, harvest administration costs, timber support costs, sale-related reforestation and stand improvement costs (KV), and one-tenth of the road costs. Sale values are sold values including KV. Both the costs and sold values used in the comparisons exclude the road construction costs incurred by the timber purchaser, that is, purchaser credit amounts. Only one-tenth of Government road costs are assigned to the current year timber sale costs, because of long life and multiplicity of uses of National Forest land. Therefore, assignment of road costs and benefits is rightly spread beyond current year timber sale areas.

Some reasons for selling timber below cost include: encouraging utilization of damaged and low profit margin timber, improving growth by meeting the silvicultural needs of individual stands of timber, and satisfying the needs of local mills and communities that are dependent on National Forest timber. Additional reasons include meeting overall multiple use objectives, such as providing road access for recreation and other uses and reducing long-term forest fuel build-up situations. For example, the Forest Service does work such as slash disposal and wildlife habitat improvement through timber sales to enhance other uses. In these situations, timber sale costs are usually considerably higher than they would be if timber production alone were the objective. It should also be noted that in 1983 the lumber market was recovering from a three-year deep recession. During such times, the market for timber products is so depressed that bid rates for Forest Service timber are below what they normally would be.

Figure 23

Average Timber Sale Costs and Values[1] By Region—Fiscal Year 1983
(Percent)



[1]See table 26.

Salvage Sale Program

In fiscal year 1983, 1.3 billion board feet of salvageable timber were sold. While this is only about 80 percent of the amount sold in 1982, the number of sales and the level of funds available to prepare and offer more salvage continues to increase. About 53 percent of this amount was sold under the special salvage program.

Authorized under the National Forest Management Act of 1976, this program allows the Forest Service to use receipts from salvage sales to cover the cost of preparing and administering sales of insect-infested, dead, damaged, or down timber, including engineering work necessary for roads. Approximately 132 million board feet of this total salvageable volume were sold to small timber operators with fewer than 25 employees. This is about 1 percent higher than the 1982 program level. The Mount St. Helens sawtimber salvage effort was nearly completed in 1983.

Fuelwood

Fuelwood cutting from the National Forests continues to be very popular with the public. For 1983 the program included a general minimum charge of $10 per permit. The charge was implemented in 1983 to provide consistency within the Forest Service on the sale of fuelwood and to be in step with sale practices of private forest landowners and other public agencies. As in the

Figure 24. Part of the 43,000 acres of timber damaged by wind and snow on the Black Hills National Forest (South Dakota and Wyoming) in 1983. Salvage logging is planned for 20 million board feet of damaged timber.

Figure 25. Visitors to the National Forest cutting and loading fuelwood.

past, free fuelwood is still available where supply significantly exceeds demand.

Fiscal year 1983 showed a decrease in the total amount of fuelwood taken from the National Forest System lands compared to fiscal year 1982. The equivalent of 3.4 million cords of fuelwood were sold or given away in fiscal year 1983, compared to 5.2 million cords in fiscal year 1982. More than 400,000 permittees removed 2.2 million cords of free fuelwood valued at about $4.5 million. This is about one-half the number of permittees and volume removed in 1982. About 1.2 million cords of fuelwood were sold in fiscal year 1983 with a value of $4.3 million as compared to the 400,000 cords with a value of $1.3 million for 1982.

Silvicultural Examinations

Silvicultural examinations and the resulting prescriptions, or recommendations, for treatment of specific forested sites are the basis for decisions concerning timber sale, reforestation, and timber stand improvement. Both timber resource inventories and silvicultural examinations provide essential data for the land management planning process. In 1983, the examination program was funded to review 5.6 million acres, with an actual accomplishment of 6 million acres. The added accomplishment was due to lower per acre contract prices.

Reforestation

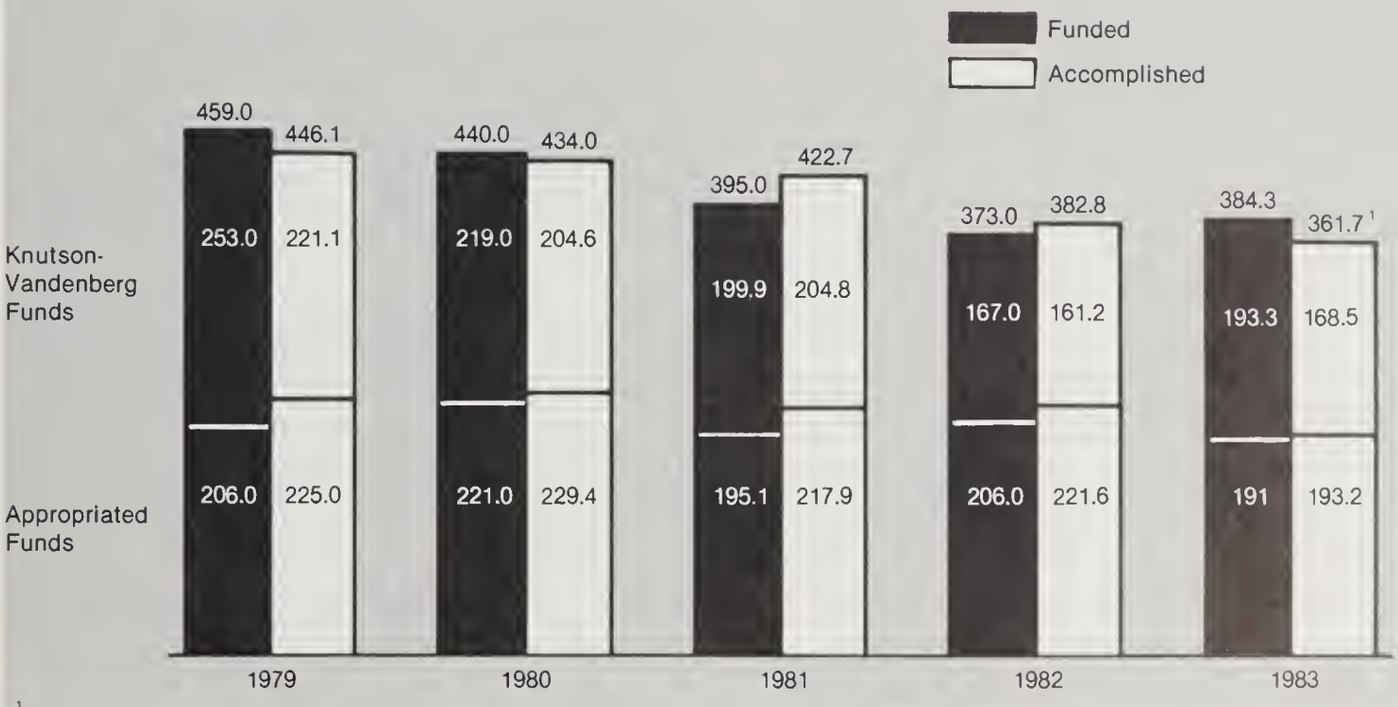
In fiscal year 1983, more than 376,000 acres of National Forest lands were reforested. About 193,000 acres were reforested with appropriated funds, 169,000 acres with money set aside from timber sales under the Knutson-Vandenberg Act (KV funds), and 14,000 acres were reforested with Job's Bill funds (tables 27 & 28 and figure 26).

At the close of fiscal year 1983, about 1 million acres were in need of reforestation, including approximately 367,000 acres resulting from timber harvest, fires, insects, diseases, windstorms, and unsuccessful reforestation treatments during the past year. Congress has mandated that backlog reforestation (the areas requiring reforestation that had accumulated over the years) be completed by 1985. By the end of fiscal year 1983, only about 223,000 acres, 7 percent of the original 3 million acres--remain to be treated (see figure 27). Many acres were removed from the backlog without actual treatment when further examination determined stocking was adequate or the lands were classified for non-timber uses, such as wilderness.

Reforestation treatment success has averaged 84 percent over the last 5 years. In fiscal year 1982, the latest data available, success was 86 percent because of favorable climatic conditions.

Figure 26

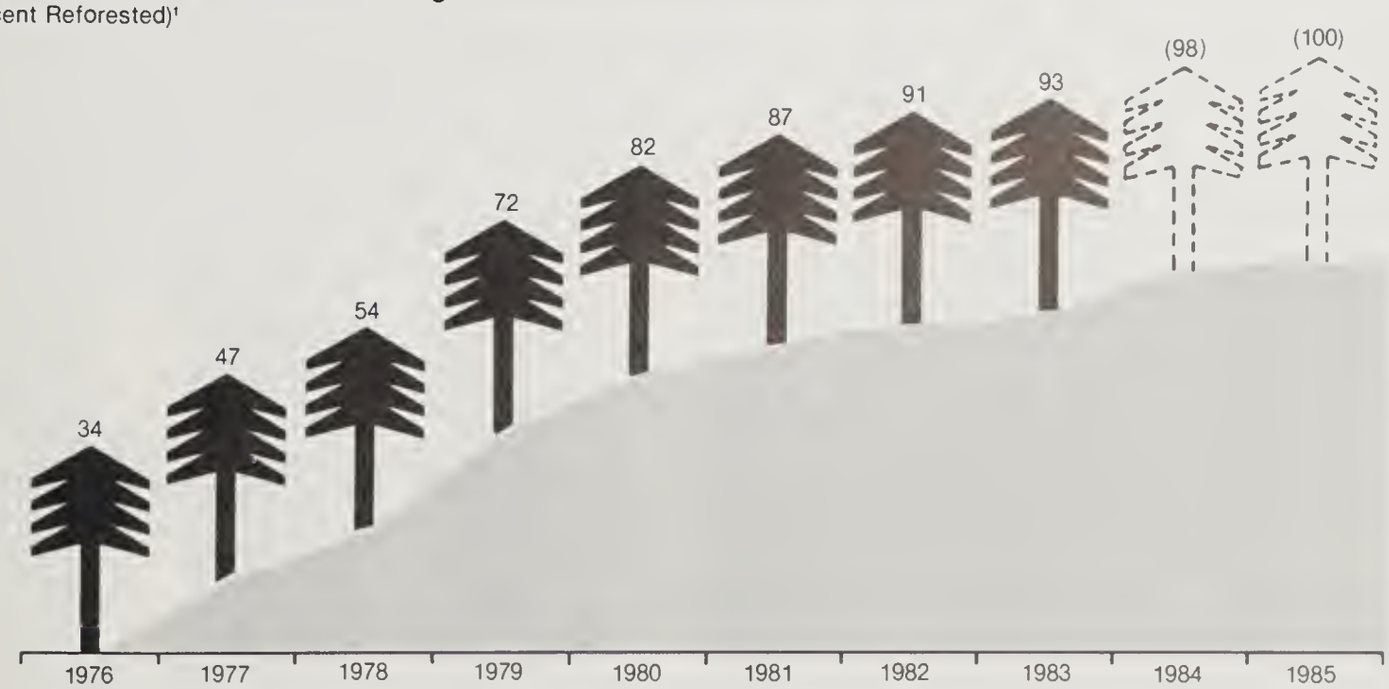
Reforestation
(Thousand Acres)



[1] Does not include 14.5 acres accomplished with Federal Emergency Jobs Bill funds.

Figure 27

Reforestation—Elimination of Backlog
(Percent Reforested)[1]



[1] Includes acres actually treated, acres re-examined and found stocked, and acres classified to other non-timber uses, such as wilderness.

The average cost of all reforestation in fiscal year 1983 was about $388 per acre (appropriated $384 and KV $393) This is an increase of 22 percent from 1982. (16 percent in constant 1983 dollars). The increase resulted from much of the work being done on more difficult and less accessible areas, especially as the backlog treatment nears completion; the amount of natural regeneration; and increased emphasis on protecting planted seedlings.

Timber Stand Improvement

Timber Stand Improvement (TSI), which is the application of noncommercial treatments to stands to improve growth and tree quality, was applied to about 555,000 acres. Various appropriated funds provided for the treatment of more than 270,000 acres, KV funds for about 127,000 acres and Jobs Bill funds improved 158,000 acres. (tables 30 and 31, and figure 28).

The future utilizable yield of timber stands can be increased in the range of 15 to 25 percent when activities, such as thinning of overly dense stands or removal of shrubs and other vegetation that compete with trees for growth, are accomplished at the optimum time. The TSI program is a key part of the opportunity to increase timber harvest levels from National Forest lands. Treatments made in stands today directly translate to increased stand yields in the future.

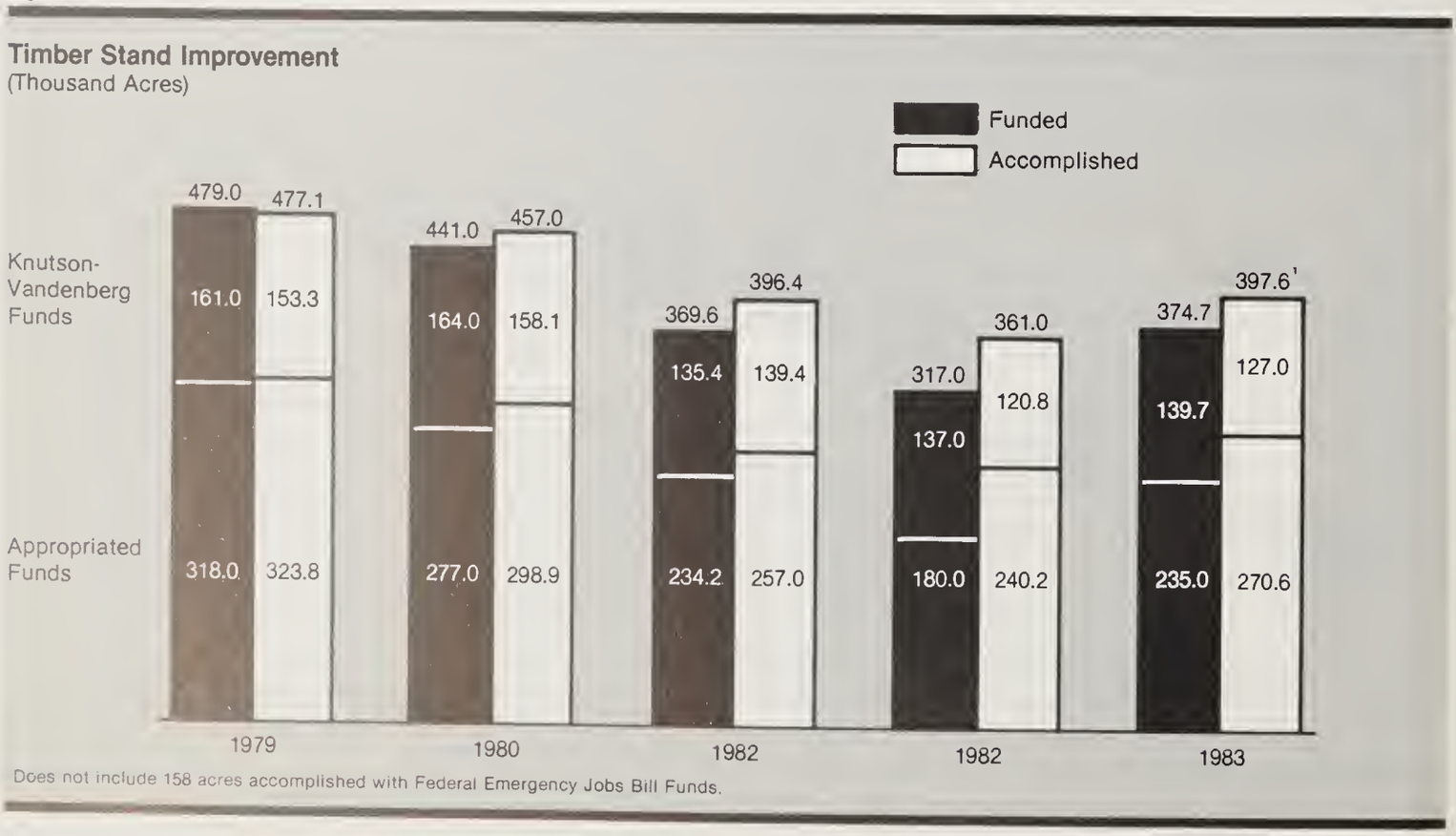
Individual forest plans will reflect the annual TSI and reforestation treatment programs that are needed to reach the harvest objectives of the plan.

As of October 1, 1983, about 1.6 million acres had stand conditions where TSI treatment would increase growth and yield per acre. This includes the acres of new stands created from reforestation, many of which need thinning to maintain a healthy, vigorous condition. In addition, fertilization needs are being reported for the first time this year. This treatment has been proved through research to be an economically viable operation in some areas.

The average cost of all TSI in fiscal year 1983 was $135 per acre, an increase of about 31 percent from 1982 (24 percent in constant 1983 dollars). TSI contract costs in the early portion of the fiscal year were low, as were many reforestation costs. As employment increased during the summer of 1983, TSI contract bid prices rose dramatically. In some locations, they were so high the Forest Service elected not to award the contracts in fiscal year 1983.

Tables 27 through 34 provide detailed information on both accomplishments and needs for TSI and reforestation.

Figure 28



Does not include 158 acres accomplished with Federal Emergency Jobs Bill Funds.

Recreation

The Forest Service's goal in managing recreation on National Forest System lands is to emphasize opportunities for experiences in a natural setting.

Recreation Use

Record snows in the Far West, spring flooding in the Intermountain West, and unseasonable rains in the South combined to dampen participation in recreation on the National Forests in 1983.

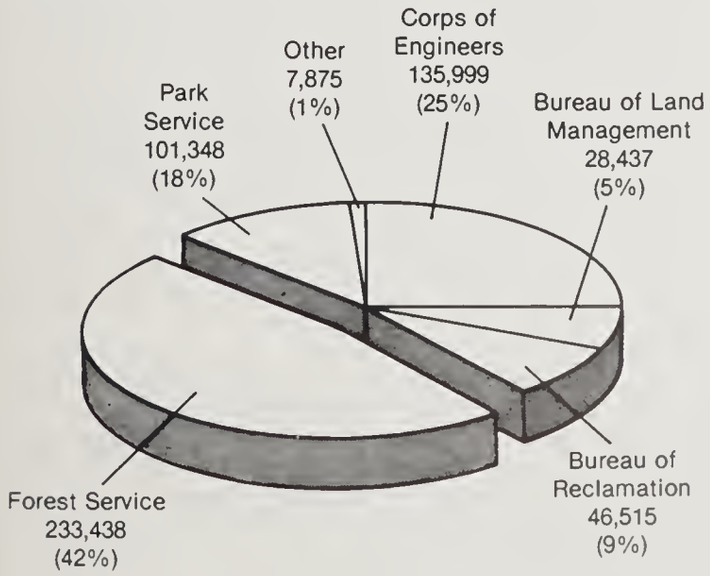
In fiscal year 1983, 228 million recreation visitor days (RVD's) occurred on NFS lands. The Western States, including Alaska, received 78 percent of this use. Since 1978, recreation use on NFS lands has increased 4 percent.

The level of use recorded at recreation facilities in 1983 was 88 percent of the RPA goal. These facilities received 81 million recreation visitor days (RVD's), down 4 percent from 1982. Recreation use away from facilities almost equaled the 1983 RPA goal of 148 million visitor days. The actual use on 147 million visitor days indicates the continuing popularity of these recreation opportunities.

More outdoor recreation occurs on National Forests System lands than on any other single landholding.

Figure 29

1982 Recreational Visitor Days by Federal Agency
(Thousand RVD's)



Total Recreation Visitor Days—553,612 Thousand

Federal lands received 554 million visitor days in 1982, according to the most recent data available from all agencies. Forty-two percent of that total was on National Forests and National Grasslands (figure 29).

National Forest recreation includes a wide range of activities from camping at constructed facilities to backpacking in primitive settings (tables 35 through 40).

Of the total use in 1983, 9.9 million RVD's occurred in wilderness and primitive areas, with about 217.8 million on other NFS lands. This was 95 percent of the RPA estimate for total recreation use in 1983.

Only one-quarter of the total recreation use occurs at facilities operated by the Forest Service. Facilities operated by the private sector or other public agencies on NFS land accommodated an additional 12 percent of the total visitation. Fully two-thirds of the recreation use of the National Forest is away from developed sites, dispersed throughout the undeveloped forest area.

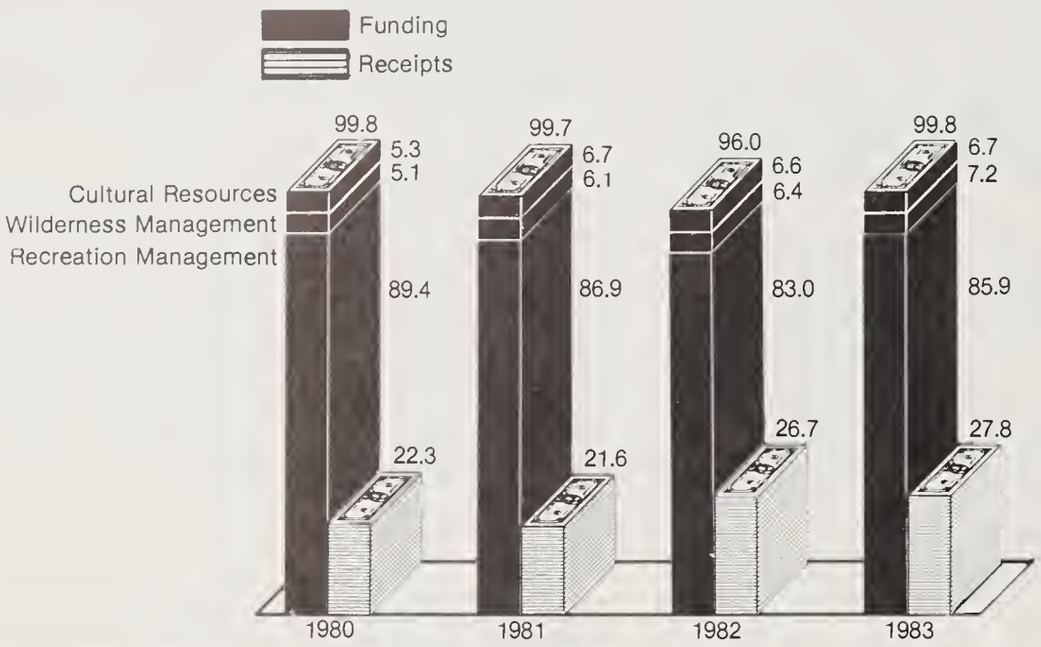
Receipts

Fee increases continued, bringing fees closer to operation and maintenance costs and reducing competition with the private sector. Receipts in 1983 totaled $27.8 million compared to $26.7 million in 1982, an increase of 4 percent in 1 year and 29 percent in 2 years (figure 31). The same receipt comparisons in

Figure 30. Hot-air balloons provide a bird's-eye view of the National Forests.

Figure 31

Recreation—Funding and Receipts
(Million Constant 1983 Dollars)



Federal lands received 554 million visitor days in 1982, according to the most recent data available from all agencies. Forty-two percent of that total was on National Forests and National Grasslands (figure 29).

The agency emphasized increasing fee receipts in 1981, 1982, and 1983. In 1982, the median fee for a NFS campsite was $3.45. In 1983, the median increased to $3.95. In 1983, an additional 91 campgrounds were placed on the fee system, bringing the total to 1,921 or 46 percent of the total 4,170 campgrounds on National Forest land.

Trails

Trails are essential for both managing the National Forests and Grasslands and meeting the demands of recreationists. Access for administration as well as recreation is provided to vast areas by the trail system.

The RPA goal for trail construction and reconstruction was 2,238 miles. Fiscal year 1983 appropriations funded 377 miles. Accomplishment was 444 miles, 18 percent above the funded level but only 20 percent of RPA. In addition, human resource programs constructed or reconstructed 524 miles; 239 of these miles were done by volunteers.

Recreation Facility Management

Historically, heavy demand and use of the National Forests led to construction of recreation facilities as much for protection of the environment as for the convenience of the user. These facilities include such improvements as campgrounds, trailheads, boat ramps, and visitor information centers.

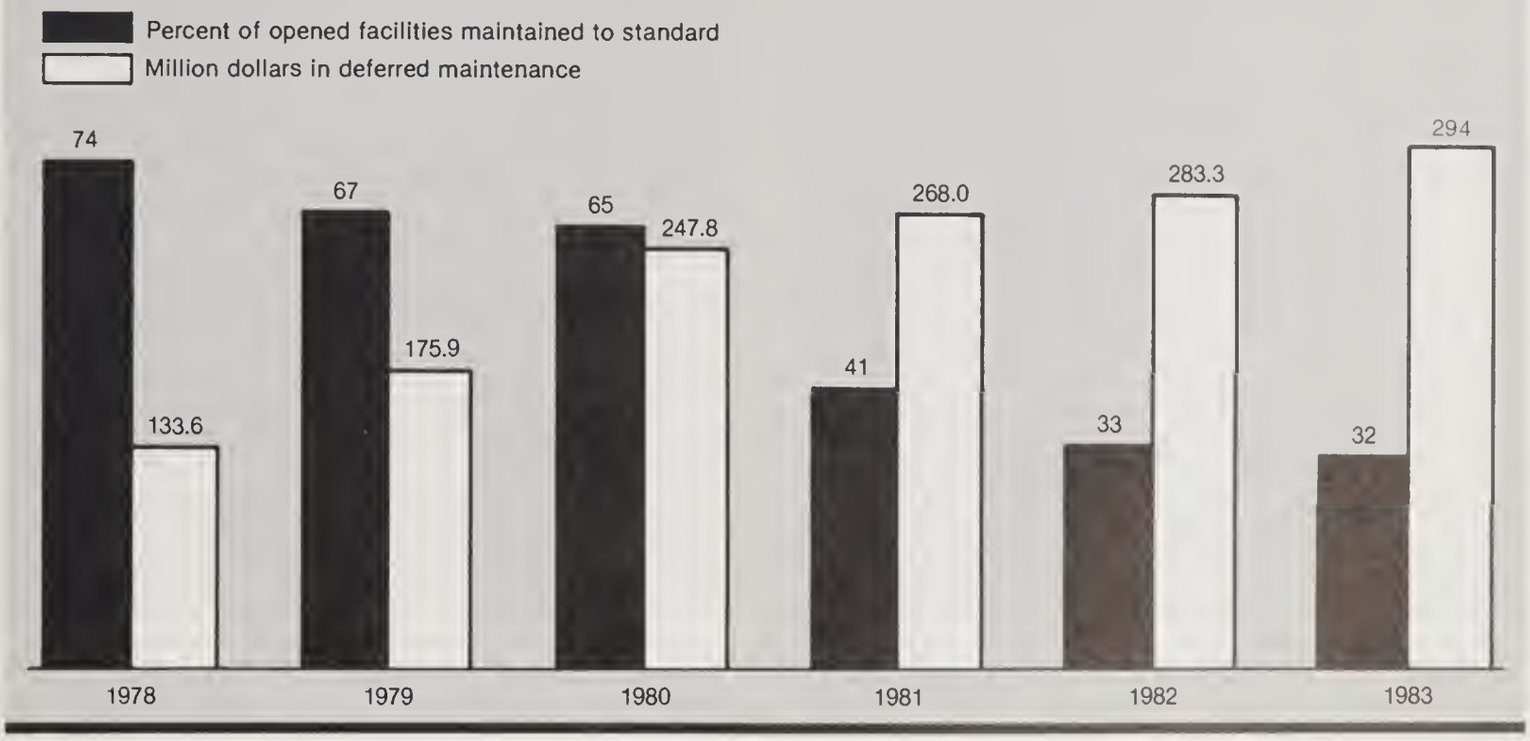
In 1983, 68 percent of the developed site capacity opened for public use was operated at less than standard service level. When a facility is operated and maintained at the standard service level, it is expected to last its designed project life. When facilities are operated at less than identified standards, deterioration is usually accelerated and facilities must be replaced sooner.

As a response to reducing Federal expenditures, it has been necessary to reduce the standard of maintenance and cleanup and shorten the length of time some facilities are open for public use. The percentage of facilities operated at standard service level decreased slightly from 33 percent in 1982 to 32 percent in 1983. In 1979, 74 percent of the opened facilities were managed at standard level.

For several years scheduled maintenance of Forest Service recreation facilities has been postponed. This deferred maintenance now totals $294.4 million, up 4 percent from 1982 (figure 32).

Figure 32

Recreation Facilities Operated at Standard Level of Maintenance Compared to Accumulating Deferred Maintenance



Recreation Site Construction

More than 77 percent of the $9.8 million allotted for recreation construction was used to rehabilitate facilities at existing recreation sites. This was necessary to protect visitor health and safety as well as the natural resources of the area. Only 23 percent was used for constructing new facilities; and of this, $1.03 million, 10 percent of the total, was for the new Mount St. Helens National Volcanic Monument.

Cultural Resource Management

The Historic Preservation Act of 1966 directs that significant properties are to be protected during ground disturbing activities. Clearance is given to projects after archeological surveys are conducted. Appropriated funds were used to clear 2.8 million acres by conducting cultural resource surveys on more than 2.2 million acres of National Forest System lands. More than 10,000 cultural resource properties were identified. Of those evaluated, 37 were nominated and listed on the National Register of Historic Places. An additional 2,400 properties were determined to be eligible for listing.

Mount St. Helens National Volcanic Monument

During fiscal year 1983, the Forest Service carried out numerous administrative duties involving Mount St. Helens. Emergency monitoring of the volcano and coordination with county, State, and Federal agencies continued. The dedication of the Mount St. Helens National Volcanic Monument occurred on May 18, 1983, the third anniversary of the eruption. The monument received 400,000 visitors in fiscal year 1983, with an additional 381,000 visitors recorded at the Forest Service visitor center located temporarily at Lewis and Clark State Park, 60 air miles from the monument. The Windy Ridge View Point and parking lot, 3 air miles from the crater, were opened, and naturalist talks and trail talks were conducted from this point. Attendance was about 80 persons per talk.

Additional construction at the monument included two information portals, two campground contracts awarded for expansion and rehabilitation, and three access roads that were widened and improved. A contract was awarded for the design of the permanent visitor center to be constructed at the Silver Lake site.

Figure 33. Visitors to Mount St. Helens National Volcanic Monument enjoy a talk by a Forest Service interpretive specialist. The monument attracted more than 700,000 visitors.

Figure 34. The crater at Mount St. Helens National Volcanic Monument periodically released plumes of vapor throughout 1983.

Wilderness

The objective of wilderness management is to provide for wilderness use, protection of wilderness resources, and reduction of conflicts between uses of wilderness and the values of wilderness. These values include solitude, naturalness, and ecological, geological, and similar features of scientific, educational, or historical value.

The RPA program called for 40 million acres to be included in the National Wilderness Preservation System (NWPS) by 1983. The Forest Service-administered portion of the NWPS was 25.2 million acres, 13 percent of the total NFS lands. This is 84 percent of the NWPS in the contiguous 48 States and 31 percent of the entire NWPS. In 1983 there were 6 additions to the NWPS totaling 74,000 acres.

Recreational use of wilderness and primitive areas totaled 9.9 million RVD's, down from 1982 when use was 11.4 million RVD's. The Nineteenth Annual Wilderness Report (as of December 31, 1983), required by Congress, provides detailed wilderness data.

Wildlife and Fish

Wildlife and fish programs on National Forest System lands are guided by the RPA program and comprehensive plans developed in cooperation with the States. Goals in the plans are based on public demand, the required habitat improvements, costs, and net benefits.

A close working relationship with State wildlife and fish agencies is maintained, since States have the responsibility for managing animal populations while the Forest Service manages the habitats.

The habitat improvements performed in 1983 either increased the capability of the land to support fish and wildlife or mitigated habitat impacts from other resource programs.

The wildlife and fish program accomplished about 94 percent of the funded habitat improvement target and 57 percent of the 1983 RPA goal; 309,900 acres of habitat were improved. A total of 109,500 acres of this habitat improvement was funded by the Knutson-Vandenberg Act. This involved approximately 10 percent of the total fiscal year 1983 KV expenditure. The focus of the program has been shifted from direct improvement to providing support to other activities, including timber harvesting, livestock grazing, and mining. A total of 337,100 additional acres of habitat was improved by support to these other National Forest System activities.

A major portion of the fish habitat improvement work accomplished in California, Oregon, and Washington, and all work in Alaska contributed toward the anadromous fish program. Approximately $3 million was expended in these areas to support stream habitat improvement projects, including in-stream structures such as fish ladders, and lake fertilization for coho salmon in Alaska.

Habitats were improved for wildlife and fish in public demand such as deer, elk, grouse, waterfowl, salmon, trout, and bass. Results include the following:

--Wetland improvement for waterfowl breeding habitat in the Lake States, the Southwest, and California.

--Prescribed burning to improve forage for mule deer and elk in the West and white-tailed deer in the East and the South.

Wildlife and Fish Resource Use

The wildlife and fish resource provided 33 million user days for hunters, fishermen, bird watchers, and others. (These are included as recreation visitor days (RVD's) in the recreation use figures in tables 10 and 12). This represents about 15 percent of all recreation on National Forests. Use in 1983 was 3 percent less than in 1982.

Threatened, Endangered, and Sensitive Species

The Forest Service carried out management programs for 64 plant and animal species that are listed by the government as threatened or endangered.

Results of programs to manage those species include these:

--Reestablishing peregrine falcons in currently unoccupied habitats in California, Colorado, Arizona, and New Mexico.

--Protecting and enhancing habitat for bald eagles primarily in the Lake States to increase populations.

--Developing and applying silvicultural techniques that maintain and enhance habitat for the endangered woodland caribou in Montana.

--Identifying habitats and special methods of managing timber to support spotted owls in the Pacific Northwest and in northern California.

--Supporting the recovery program of the California condor through habitat protection.

--Implementing management and recovery plans for sensitive species listed by the government through survey and habitat protection and enhancement.

Figure 35. Grizzly bear.

Special emphasis was given to grizzly bear management. The Forest Service was instrumental in the establishment of a national Interagency Grizzly Bear Committee. The committee is responsible for implementing and coordinating Federal and State agency efforts to encourage the recovery of the grizzly. Members are the Forest Service (three Regions), Fish and Wildlife Service, Bureau of Land Management, National Park Service, and the States of Montana, Idaho, Washington, and Wyoming.

The Forest Service has intensified its efforts to prevent conflict between bears and humans in an attempt to reduce or eliminate unnecessary bear mortality. An intensive public information effort informs backcountry users of proper conduct in grizzly habitat and provides information on the tenuous status of the grizzly population in the 48 States.

The sensitive species program of the Forest Service provides management to ensure the continued viability of plant and animal species on National Forest lands. Emphases are on avoiding significant impacts that would result in a species becoming threatened or endangered, and assisting States in their endangered species programs.

Support to Other Resource Programs

Wildlife and fish habitat needs are considered in other resource programs such as timber and mining. Timber management programs are important to help meet habitat improvement objectives for species such as bear, deer, elk, turkey, and squirrels. For example, timber sales are planned with full consideration for grizzly bear habitat. Sales are also planned to improve elk habitat by harvesting in locations to provide forage close to cover.

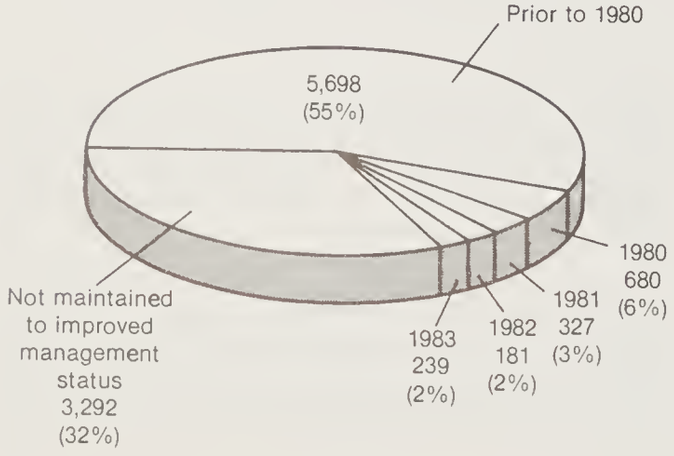
Range

The range resource on National Forest System lands is managed to maintain land productivity for grazing and other uses. The manner and degree to which vegetation resources are used affects water quantity and quality; soil productivity and stability; wildlife habitat; forage for livestock, wild horses, and burros; and esthetics.

The 1983 RPA goal for the range management program was 10 million animal unit months of livestock grazing. (An animal unit month is the amount of forage needed to support a 1,000-pound animal for 1 month.) The appropriation of $32.4 million allowed the accomplishment of 10 million animal unit months.

Figure 36

Range—Status of Allotment Management
(Allotment Plans)



Total allotments — 10,417

Construction of structural improvements in 1983, such as fences, water developments, and pipelines, affected 1.9 million acres, 121 percent of the target. Nonstructural work, such as seeding, burning, and mechanical or chemical treatment of vegetation, was completed on 142,000 acres, 101 percent of the target.

In addition to administering the grazing program, the Forest Service captured 453 excess wild horses and burros and offered them for adoption in order to balance range use with carrying capacity. In cooperation with local weed control districts, the agency treated 20,500 acres of National Forest lands to prevent infestation of neighboring private agricultural lands with noxious weeds.

Grazing Program

The National Forest System provides grazing to more than 14,000 permittees for cattle, horses, sheep, and goats during one or more seasons of the year. Grazing permittees depend on this forage to complement livestock operations on their land.

In the Public Rangelands Improvement Act of 1978, Congress established the formula that the Forest Service and Bureau of Land Management use for calculating grazing fees through 1985. The formula is based on what the farmers and ranchers spend on livestock production and what they receive from sales. A decline in beef cattle prices coupled with increases in production costs resulted in lower grazing fees in 1983 than in 1982.

Prescriptions for the efficient use and sustained production of grazing allotments are described in an allotment management plan. Improved management (which begins when one or more actions prescribed in the allotment management plan have been initiated) was started on 534 allotments during fiscal year 1983. Improved management was maintained on 68 percent, or 7,100 allotments, which is a 2 percent increase over 1982 (figure 36). Benefits from range improvement are realized from 3 to 30 years following implementation. These benefits include improved range and watershed conditions and increased forage and browse production.

Receipts

In 1983 receipts from the grazing program totalled $10.2 million. This amounted to a 31-cent return for every dollar spent. Total receipts decreased by 22 percent from 1982 and are 56 percent lower than the peak in 1980. The decrease results from a reduction in fees charged per animal month and not from reduced grazing use.

Soil and Water

Administration

The 1983 soil and water program emphasized production of goods and services from National Forest System lands in a manner that assures maintenance of soil productivity and water quality. Major activities included providing information on soil and water for inclusion in management plans, prescribing practices to prevent soil loss or damage and to protect water and soil from the effects of land-disturbing activities, monitoring the effectiveness of current practices for maintaining soil and water values, quantifying water needs and securing water rights, and maintaining soil and water improvement projects. The largest single activity for soil and water specialists in 1983 was providing technical assistance to other resource programs, primarily timber and minerals management.

Soil and Water Resource Improvement

Watershed improvement projects are undertaken to improve soil stability, prevent stream siltation, and enhance soil productivity.

Watershed improvements were accomplished on 9,000 acres through congressionally appropriated money. Improvements on another 7,200 acres were attained through the use of money collected from timber sales under authority of the Knutson-Vandenberg (KV) Act, and through Youth Conservation Corps, volunteers, and other human resource programs. This represents 136 percent of the funded target and 54 percent of the 1983 RPA scheduled activity. The funded target was exceeded because costs of the projects accomplished were lower than estimated (figure 40).

The small number of forest fires in 1983 minimized the amount of emergency treatment necessary on burned areas. Emergency treatment measures of grass seeding, erecting erosion control structures, and the like were applied to 95,000 acres.

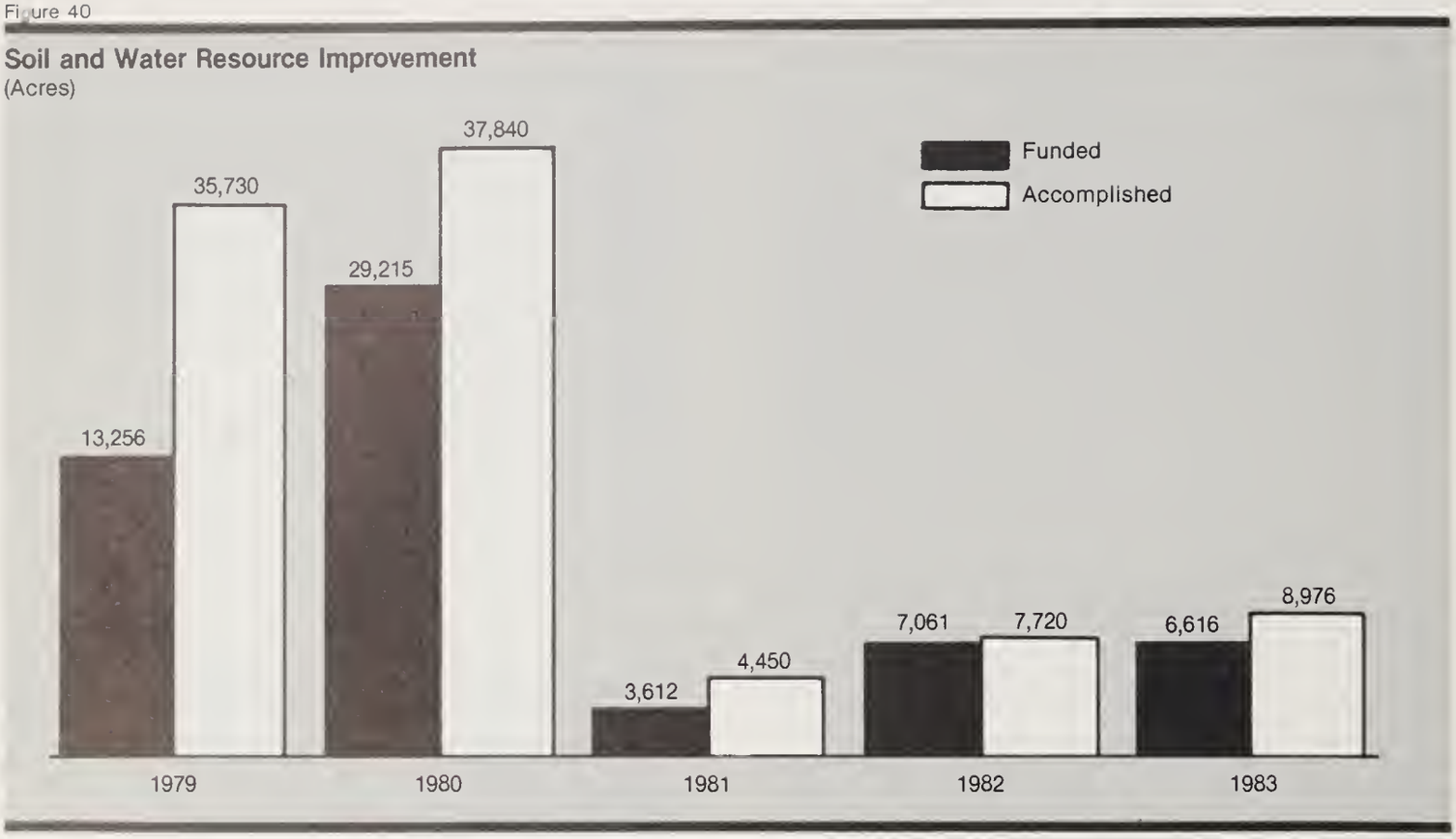
Unusual weather patterns in 1983 caused major floods on many National Forests in the West, particularly in Arizona, California, New Mexico, and Utah. Damage was severe to National Forest watersheds, steam channels, fisheries habitat, transportation systems, and recreation and administrative facilities. Approximately $3 million of regularly appropriated funds were used for damage assessments and emergency repair in 1983. Flood damage restoration needs exceeding $30 million were identified on National Forest lands in the Intermountain, Southwestern, and Pacific Southwest Regions.

Figure 37. Prior to shaping and fertilization, this abandoned farmland on the Oconee National Forest was severly eroded, with many deep gullies.

Figure 38. Heavy equipment was used to fill, gullies and construct terraces for the control of surface water.

Figure 39. Four months after seeding, the site has been stabilized with abundant vegetation. Planting of pine trees will return the site to full productivity.

Figure 40



Inventories

In 1983, high intensity soil inventories were completed on 6.7 million acres. These inventories, which are essential to wise resource management, provide information about soil productivity, erosion and stability problems, and relationships between vegetation and water yield. Forest Service soils surveys are conducted as a part of the National Cooperative Soil Survey.

Roads

Construction

In 1983, development of the transportation system consisted primarily of support to the timber program, through the Purchaser Credit Program (PCP), which provides for building roads in exchange for timber, and the Forest Road Program (FRP), which provides for development of roads with appropriated funds. The construction or reconstruction of many roads to manage resources other than timber was deferred during 1983.

Purchaser credit is used when roads are built in exchange for timber purchased. In 1983 the PCP constructed 2,948 miles of roads in support of current timber sales. An additional 1,035 miles were constructed and 981 miles reconstructed through the FRP which constructs roads for future timber sales and provides engineering support (such as design and survey) on roads built by the purchaser.

The 2,016 miles of roads constructed and reconstructed with appropriated funds exceeds the target of 1,637 miles by 23 percent. The increase in miles came about for the following reasons:

1. Savings from bid prices lower than anticipated.

2. Continued efforts to reduce road standards, which reduce overall costs.

3. Funds for projects delayed as a result of court injunctions and/or right-of-way acquisition problems were spent on less costly projects.

4. Cooperation with other governmental agencies and private industry.

Nearly 67 percent of these roads were located in the major timber-producing regions of Montana, northern Idaho, Washington, Oregon, California, and the Southeast. More roads (344 miles) were built or rebuilt in Montana than in any other State (table 50). A total of 154 bridges were also built through the FRP.

In fiscal year 1983, overall cost per mile for road construction in the FRP program was $120,000, 14 percent less than in fiscal year 1982. The PCP showed a 20-percent decrease.

The Forest Service has been able to reduce costs by continuing its emphasis on reducing road design standards and building the minimum number of roads

necessary to harvest timber, and by limiting reconstruction to that which is essential for maintenance of the road for timber hauling. In addition, intensified competition among contractors has resulted in lower bids and a reduction in construction costs. The low demand for timber has also lessened the demand for road construction.

The regions with the highest expenditures were able to reduce costs in fiscal year 1983 by 33 percent. The Pacific Northwest Region, for instance, reduced cost per mile from $79,800 in 1982 to $55,500 in 1983. Many of the sales in these Regions were in old sale areas where road construction costs were minimal. In future years purchasers will be entering areas where road construction will probably be more expensive.

Many of the newly constructed/reconstructed roads will not be open for public use because of the safety hazard of mixing public traffic and timber hauling traffic on reduced-standard roads. Since these roads will be built to serve a single resource (timber), future resource needs may necessitate reconstruction to a higher standard. Also, approximately 75 percent of these roads will be closed to traffic during wet weather when they and other resources are more susceptible to damage.

Roads to be built by timber purchasers fell short of the projected 7,854 miles by a total of 1,439 miles. Such construction is dependent upon the sale of timber by the Forest Service. The shortfall can be accounted for as follows:

Sales offered and not sold	370 miles
Sales deferred until next fiscal year	298 miles
Sales offered late in fiscal year 1983 but not awarded by the end of the fiscal year	197 miles
Timber sales held up or halted by court injunctions	118 miles
Changes in the timber sale program and sale layout that reduced total miles of road construction needed to harvest timber	498 miles

Of the remaining 6,400 miles of road and 29 bridges, 660 miles were turned back to the Forest Service for construction under the purchaser elect option (tables 50 and 51). Many small purchasers elect to have the Forest Service construct these roads in lieu of purchaser credit. This purchaser elect option is used by those who do not have the capital, equipment, and/or personnel to build roads.

In the past, about 80 percent of road construction/reconstruction miles have been financed from purchaser credit and purchaser elect. The cost of roads constructed or reconstructed from purchaser credit funds and purchaser elect funds does not include engineering support, such as design, survey, and construction inspection. This is significant when comparing the cost per mile of roads built by different funds. In 1983, each dollar of purchaser credit and purchaser elect required 53 cents of engineering support from FRP funds. This is a 24-cent increase from fiscal year 1982 and reflects the increased work being done to survey and design roads to meet planned increases in timber production.

Figure 41. Logs being transported over a road within the National Forest System.

Twenty-eight percent of all purchaser road activity (1,800 miles) occurred in the Pacific Northwest. Historically, nearly one-third of all roads are constructed in this area.

Maintenance

More than 321,000 miles of roads existed on National Forest System land in fiscal year 1983. The Forest Service identifies five levels of maintenance based on the type and frequency of care a road is given. They are as follows:

Level 1. Closed to all traffic. Maintenance only as required to protect resources. 86,200 miles.

Level 2. Single-lane primitive roads intended for use by high-clearance vehicles. 143,100 miles.

Levels 3, 4, and 5. Maintained for passenger car traffic. Road standards, traffic volume, and degree of user comfort increase from level 3 to level 5. 92,300 miles.

In 1983, 71 percent of the roads were operated at the two lowest levels, while the remaining 29 percent were operated at the three highest levels.

State and Private Forestry

INTRODUCTION

State and Private Forestry strives to improve the productivity of timber and other resources on private and other non-Federal lands. Principal goals include the protection of resources from fire on private and non-Federal lands and protection from insects and diseases on all land.

Through these programs, landowners and State and local governments can receive assistance—both financial and technical—for the management, planning, and protection of their forests and forest operations. The Federal assistance program addresses national concerns and priorities.

The Forest Service administers State and private forestry programs. Most financial and technical assistance is provided to State forestry organizations that work directly with landowners and timber processors.

Targets negotiated with State forestry organizations represent what is expected from combined Federal and State funding. Tables 52, 53, and 54 compare some funding levels, targets, and accomplishments. The State and Private Forestry cooperative programs are presented in four categories:

—Cooperative Land and Resource Protection

—Cooperative Renewable Resource Management and Utilization

—Special Projects

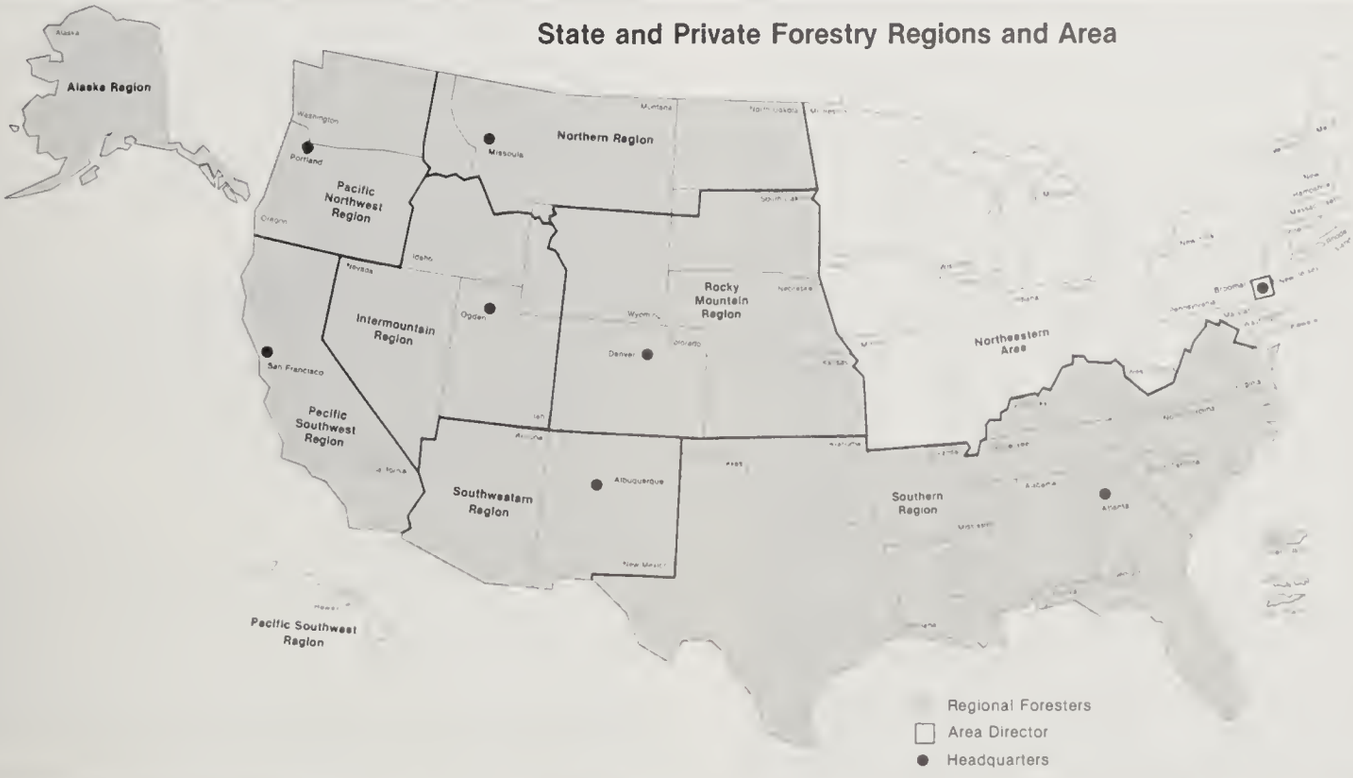
—Other Programs

The first three categories include programs for which funds are appropriated to the Forest Service. "Other Programs" includes those for which funds are transferred to the Forest Service by other Federal agencies.

COOPERATIVE LAND AND RESOURCE PROTECTION

Two programs authorized by the Cooperative Forestry Assistance Act of 1978 provide assistance for management of forest pests and for fire protection in rural areas.

Figure 42



Forest Pest Management

The Forest Pest Management (FPM) program provides for protecting forest resources on lands of all ownerships from insects and diseases. FPM works directly with the National Forest System (NFS), and cooperatively with State and other Federal officials to provide surveys, prevention, suppression, and technical and financial assistance. The program was funded at $27.8 million in 1983. Additional funds, which were allocated for fiscal year 1982 and were not spent, were carried over into fiscal year 1983 and used for pest management.

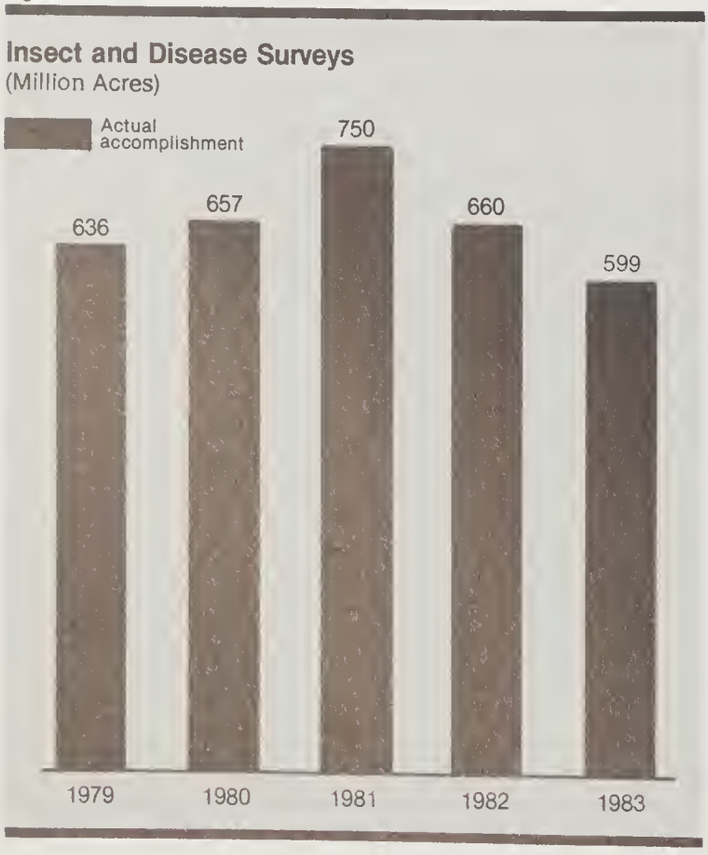
Surveys and Technical Assistance

Early detection and evaluation of pest problems reduces the loss of trees and the cost of suppressing insects and diseases.

Detection and evaluation surveys were made on 599 million acres of forested lands of all ownerships (figure 43). This is 88 million acres more than the 1983 RPA goal.

The increase reflects the increased workload caused by the gypsy moth and spruce budworm outbreaks in the Northeast and the western spruce budworm and mountain pine beetle outbreaks in the West. It also reflects greater efforts to detect potentially damaging southern pine beetle infestations in the South so that early suppression activities can be initiated.

Figure 43



Suppression

An integrated pest management approach is used so that timber, watersheds, recreation, wildlife, and esthetics are protected. This approach employs the best combination of available pest suppression tactics, which may include silvicultural, biological, chemical, mechanical, and manual means. Emphasis is on thorough pretreatment evaluations that determine critical control needs and the best combinations of suppression tactics that are consistent with wise resource management. About 2 million acres of forested lands of all ownerships received treatment in 1983.

Damage caused by gypsy moths was one of the most significant problems in 1983. Gypsy moth larvae defoliated trees on 2.4 million acres in the Northeast. Although this was a 71-percent decrease over 1982, it was the fourth highest acreage on record for this pest. Larval populations were reduced and foliage was protected on 591,500 acres of forested communities and recreation areas with the use of chemical insecticides and the bacterium Bacillus thuringiensis (B.t.).

Major pest suppression projects were also conducted against the spruce budworm in Vermont and dwarf mistletoe, mountain pine beetle, and spruce budworm in the West. A total of 616,100 acres received treatment. These suppression programs resulted in protecting an estimated 98.5 million cubic feet of merchantable timber and salvaging an estimated 7.7 million cubic feet of merchantable timber that was already infested.

Oak wilt surveys on 11 million acres in central Texas identified several areas with significant mortality. Promising oak wilt control techniques are being evaluated and applied.

Southern pine beetle suppression in the South resulted in 710,700 acres being treated. This provided for the protection of 47.5 million cubic feet of merchantable timber. In addition, 3.1 million cubic feet of infested merchantable timber was salvaged.

Special Projects

Special projects were conducted to acquire information or transfer new technology. Projects included producing the Douglas-fir tussock moth virus and participating in the National Agriculture Pesticide Impact Assessment Program, which provides benefit and risk information on pesticides to the U.S. Environmental Protection Agency. In addition, 69 Federal employees were trained and certified in the proper application of pesticides to meet the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act of 1978, as amended.

Pesticide Use on National Forest System Lands

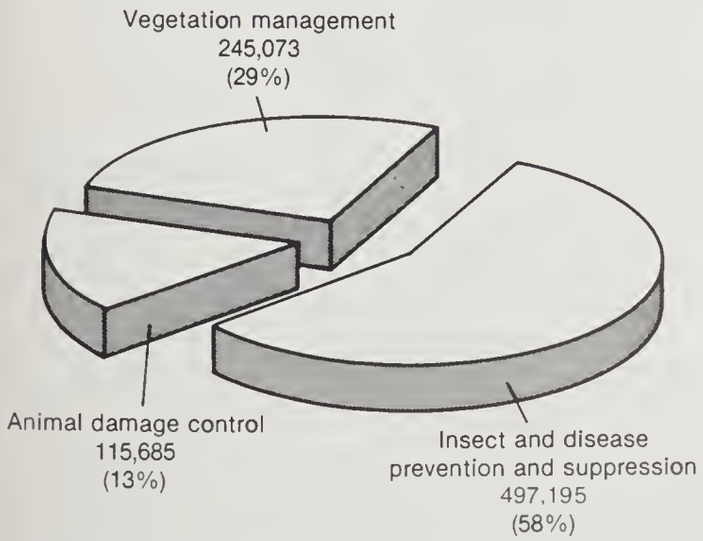
Pesticides are a component of integrated pest management. They are used to accomplish such things as preventing and suppressing insect and disease outbreaks, reducing unwanted vegetation, and controlling damage-causing animals. Pesticides are prescribed only after thorough environmental analyses determine that their use is appropriate. Only chemicals registered by the U.S. Environmental Protection Agency are used.

In fiscal year 1983, about 858,000 acres of National Forest System lands were treated with pesticides, including 245,100 acres for vegetation management, 497,200 acres for insect and disease prevention and suppression, and 115,700 acres for animal control (figure 44). These figures represent pesticide applications on less than 1 percent of the total acreage of National Forests and Grasslands.

Table 55 is a summary of all pesticides used on National Forests and Grasslands in 1983.

Figure 44

Pesticide Use on National Forest System Lands
(Acres treated)



Total acres treated—857,953

Figure 45. Western spruce budworm larva.

Figure 46. Southern pine beetle.

Rural Fire Prevention and Control

The Rural Fire Prevention and Control Program provides financial and technical assistance to help States achieve fire protection on non-Federal wildlands. Federal funding for this program in fiscal year 1983 was $14.4 million and provided protection to approximately 844 million acres.

During fiscal year 1983, a national analysis of the efficiency of fire protection on these lands was completed and will be used as a reference point for Federal assistance while individual State analyses are being completed. A study on the roles of individuals, firms, States, and the Federal Government in the protection of State and private lands from the hazards of wildfire was also done. These studies, completed in cooperation with the National Association of State Foresters, indicated the need for a strong continued Federal role in helping the States protect non-Federal lands from fire. Two States have completed their analyses and 29 States are currently involved in analyzing their situations. In addition, California, Oregon, Pennsylvania, and North Carolina are developing and pilot testing a prevention option that identifies and addresses cost effective fire prevention needs (figure 47).

New Mexico has completed a statewide interagency efficiency analysis which showed that, through interagency cooperation, $1 million could be saved in costs of protection and loss of resources.

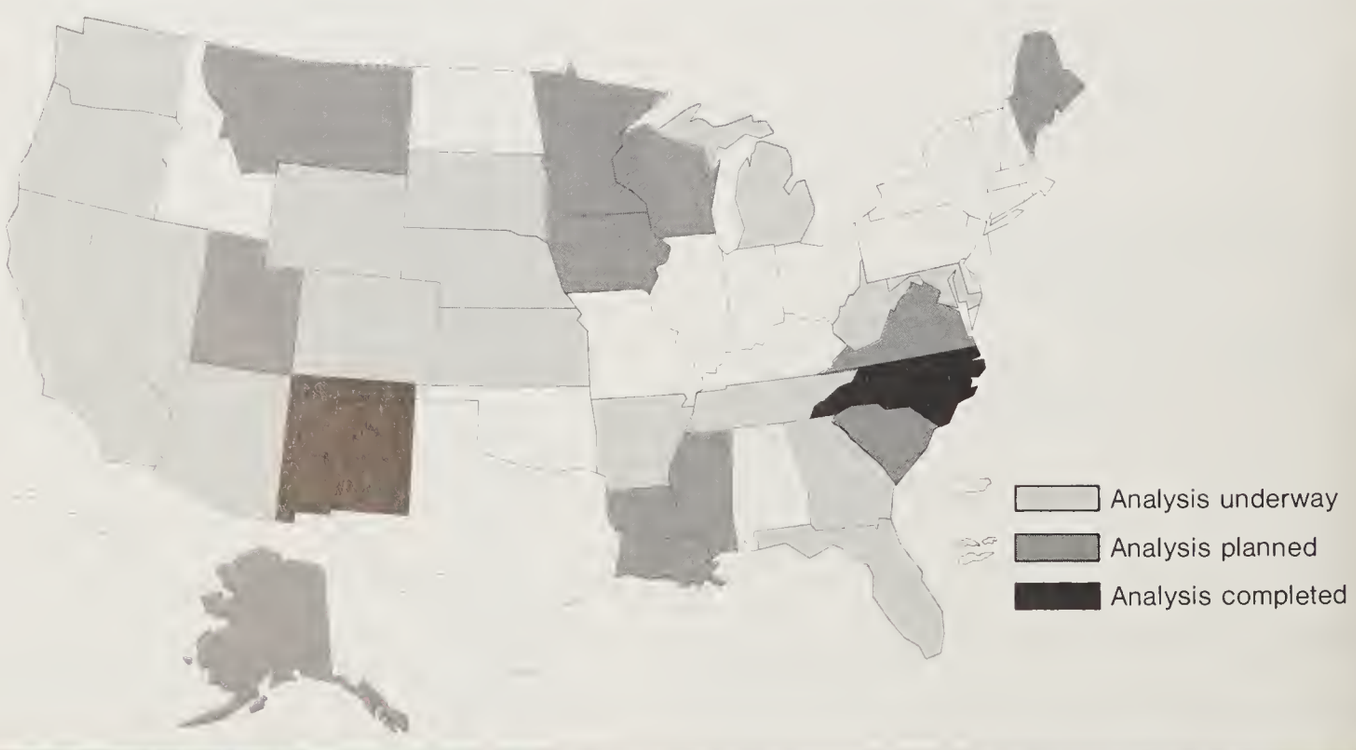
A new process for distributing Federal assistance to the States will be implemented during fiscal years 1984 and 1985. This system was developed by a task force consisting of State and Federal representatives working with the National Association of State Foresters. Assistance will be based on State activities that provide national benefits.

The recently developed National Interagency Incident Management System (NIIMS) enables managers to use the combined fire suppression resources of cooperating fire protection agencies. The Forest Service provides national leadership. The focus has been on providing information, guidance, and training. States now actively implementing NIIMS include California, Florida, Minnesota, Nevada and Colorado. Seven additional States plan to adopt NIIMS, an excellent example of getting new technology into practice quickly.

A videotape titled "NIIMS In Action" was developed to show the application of NIIMS to local agencies and how the concept can be used for emergencies other than fire. A brochure titled "The National Interagency Incident Management System - Teamwork in Emergency Management" was developed and distributed. To date 17 NIIMS training packages have been developed and seven training sessions conducted.

Figure 47

State Fire Analysis Status



COOPERATIVE RENEWABLE RESOURCE MANAGEMENT AND UTILIZATION

The Cooperative Forestry Assistance Act of 1978 authorizes assistance for forest management, wood utilization, nursery and tree improvement, urban and community forestry, organization management, resource planning and technology implementation activities. For information on accomplishments refer to tables 57, 58, and 59.

Rural Forestry Assistance

The Forest Service, through State forestry organizations, provides technical and financial assistance to landowners to improve production on nonindustrial private forest lands. The purpose is to help meet the Nation's future wood products needs while maintaining or enhancing other forest resources, such as soil and water, wildlife habitat, range, and recreation. Assistance is also provided to wood-using industries to stimulate efficiency in harvesting and processing.

In 1983, Forest Management and Utilization funding totaled $12.9 million. Of primary emphasis was a joint effort by the Forest Service and the States aimed at improving the productivity of State service foresters. This is essential to cope with reduced Federal and State budgets. A Productivity Improvement Project Handbook was published.

Figure 48. A timber stand after an unprescribed harvest. The site productivity has been compromised for many years in the future.

Bringing unmanaged forest land under technically sound management is a basic need (see figures 48 and 49). In 1983, service foresters developed forest management plans covering 3.4 million acres of nonindustrial forest land. Reforestation was accomplished on 513,000 acres; and other improvements, such as thinning, were done on 314,000 acres.

The nursery program assisted in upgrading the quality of State nursery operations and helped them expand to meet future needs. In 1983, Federal assistance enabled several States to build cold storage facilities and initiate refrigerated transportation of seedlings. These activities will improve the quality of seedlings at field planting sites and, consequently, increase survival rates.

About one-third of the tree seedlings provided to nonindustrial landowners by southern State nurseries are genetically improved stock which reduces losses due to diseases and increases yield thereby increasing plantation productivity. The Federal-State goal through the tree improvement program is to have all seedlings produced by 1990 be first generation genetically improved.

Efforts in utilization centered around four major activities: harvesting (cutting and hauling wood to the mill), primary processing (initial milling of logs), secondary processing and drying (finishing into desired

Figure 49. This stand was thinned under the direction of a professional forester. The forest is in a highly productive condition.

sizes and products, drying, construction and manufacturing), and fuel and byproducts (developing or recovering fuel and fiber products).

The Sawmill Improvement Program (SIP) and the Improved Harvesting Program (IHP) continue to be popular with industry. A total of 269 SIP-related studies, 190 felling and bucking studies, and 85 logged-area analyses were conducted during 1983. Several companies have adopted the computer technology involved in these studies for their internal use.

Spinoff effects of each of these programs have resulted in the establishment of "in-house" quality control activities. For instance, one firm evaluated the mechanical damage to logs in harvesting and handling such as stump pull, stabbing, and breakage (figures 50 and 51). The results of this study have stimulated at least 16 major firms that collectively produce more than 1.7 billion board feet of lumber to initiate quality control programs in their operations.

Acceptance of the Truss-Framed System (TFS) continues to accelerate as builders and others learn about the significant savings in cost and material associated with the system. Since its introduction 3 years ago, TFS structures have been built in 30 States. The system has been accepted by the Federal Housing Administration, the Farmer's Home Administration and within the three model codes commonly used in this country. "The Truss-Framed Construction Manual" was published cooperatively in 1982 by the Forest Service and the National Association of Homebuilders Research Foundation. Sales have exceeded 12,000 copies.

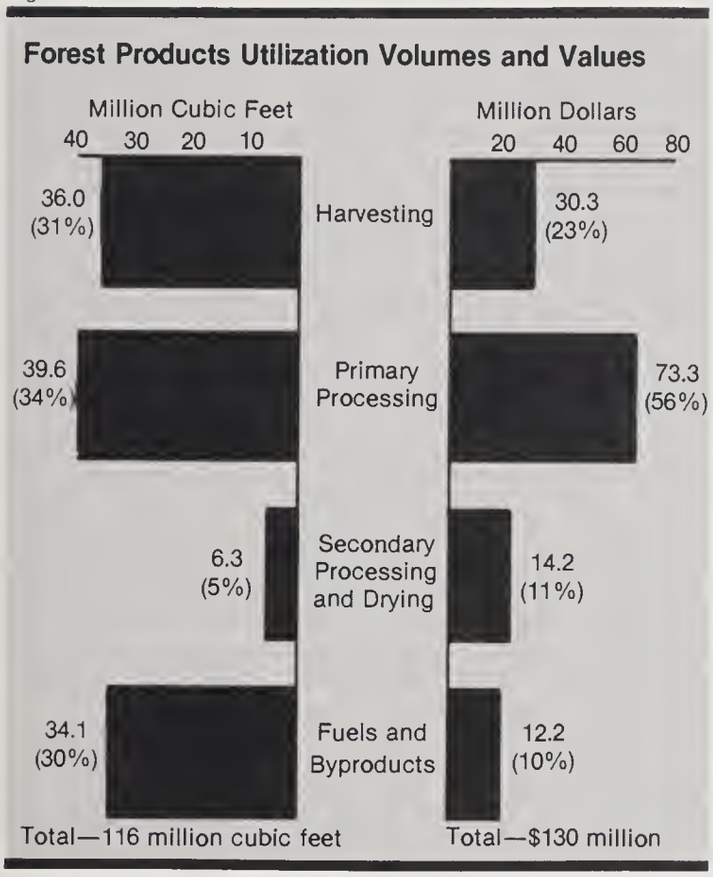
A survey of residential use of fuelwood indicated that more than 42 million cords of wood were burned in residences last year. More than 2 million wood stoves were sold last year. This continued high demand for wood as fuel has affected the Forest Service's role in assisting State and local foresters. In 1983, programs included helping foresters, landowners, county extension agents and others improve their technical skills on the use of wood for energy; preparing a slide-tape show on fuelwood management for landowner groups; and publishing "A Preliminary Economic Analysis for a Wood Energy System" to help institutions and industry determine the economic feasibility of establishing new, or converting existing, heating systems to wood burning.

Forest Service utilization assistance resulted in extending wood resources by 116 million cubic feet of final product. The associated value of the improved use is $130 million (figure 52). Industrial productivity stimulated through these activities can have both immediate and long-term effects on cost reductions and the extension of the timber resource. The Federal share of the cost of these programs was $2.5 million. At those cost and benefit levels, $52 of public benefits were achieved per Federal dollar expended.

Figure 50. End of a long butt log with stump pull--internal splintering--due to improper logging.

Figure 51. Results of stump pull on lumber recovered from the damaged log.

Figure 52



Soil and Water Management

The Forest Service is responsible for the forestry components of the USDA National Conservation Program. Work accomplished as a result of the Resources Planning Act is responsive to both the RPA Assessment and the Resources Conservation Act (RCA) appraisal of forestry needs for watershed protection and improvement on non-Federal lands.

Specific soil and water management activities include the development and implementation of pollution control programs in nine States. Financial assistance totaled $55,600 in fiscal year 1983.

Urban and Community Forestry

The urban and community forestry program focuses on a better quality of urban life through the management of trees, forests, and associated resources in and near urban areas where more than 75 percent of Americans live. This program was funded at $1.5 million in 1983. Technical advice by State forestry organizations was provided to planners, developers, builders, city foresters, forestry consultants and citizen groups representing 3,655 urban areas. Financial assistance was also provided to some communities. Assistance helped reduce loss of forest land to urban sprawl, control soil erosion, protect forests during development, increase the use of wood waste, and plant trees for passive energy conservation.

Assistance in Management Planning and Technology Implementation

This group of programs helps State foresters develop stronger organizations to effectively plan, manage, and protect non-Federal forest lands effectively and efficiently. Financial assistance totaled $2.7 million in fiscal year 1983. The Organization Management Assistance program helps State foresters improve their organizations so that they can be more effective in accomplishing forestry goals. Key activities include work load analyses, performance evaluation, executive development, and improvement of internal communications.

Planning Assistance helps each State develop and use a systematic process for forest resources planning. Other thrusts are to aid the State in economic development and to improve the management of natural resources. An additional benefit is that the RPA Program receives accurate information from the State.

In 1983, States completed 17 draft plans and 12 final plan, covering a total of 268 million acres. This is 178 percent of the fiscal year 1983 goal.

The Technology Transfer program assists in the prompt application of forestry knowledge so that the Nation's forestry resources can be protected, managed, and utilized better.

Technology for low-cost management of small forest properties is being transferred to foresters in the South through a training and demonstration program conducted at the Crossett Experimental Forest in Arkansas. As a result, many small forest properties that would not be managed because of a lack of capital can now be helped by trained foresters.

Also, a technology implementation effort is underway to provide technical information regarding the protection, management, and regeneration of poplar plantations for biomass and energy production. The forest industry has expressed great interest in this project. Major cooperators include the Packaging Corporation of America, Louisiana Pacific Corporation, and Flambeau Paper Company.

The use of the Stand and Tree Evaluation and Modeling System (STEMS) has been extended. It was originally intended for use in projecting growth and yield in order to keep State inventories current. The National Forests in the Lake States now use it in their forest plans to estimate how the resources will react to various treatments. Six large timber companies have incorporated STEMS, or part of it, into their inventory systems to estimate current timber volumes for management, planning, and tax purposes. Eleven universities either have used or are using STEMS for research and/or educational purposes, such as forest economics and methods for inventorying forests.

A computer model of the kraft pulping and papermaking process, developed to study the economic effects of a variety of new processing concepts, is being transferred to industry. According to feedback from such companies as Nekoosa Papers and Beloit Corporation, the process is feasible and has many potential applications to improve efficiency. The model has also served as the basis for the Forest Service's research efforts on the evaluation of its press drying method of papermaking.

SPECIAL PROJECTS

Pinchot Institute for Conservation Studies

The Pinchot Institute for Conservation Studies at Milford, Pennsylvania, is housed at Grey Towers, the former home of Gifford Pinchot, first chief of the Forest Service. The picturesque, 161-acre estate is a national historic landmark. Each year the institute's personnel welcome thousands of tourists for tours of the house and gardens.

The interpretive program covers Pinchot's philosophies and career, Grey Towers and Forest Service history, and the program of the Pinchot Institute.

The "National Friends of Grey Towers" has been formed to raise funds and make acquisitions to enhance, preserve, and restore the estate and further the institute's work. William Scranton, Lieutenant Governor of Pennsylvania, is the national chairman.

A number of conservation groups have used Grey Towers for their meetings.

Boundary Waters Canoe Area

The Boundary Waters Canoe Area Wilderness Act of 1981 authorized the Secretary of Agriculture to cooperate with the State of Minnesota in a forest management intensification program to be applied on State, county, and private lands. Accomplishments in 1983 with the $3 million appropriated for this purpose included 20,000 acres of reforestation, 10,000 acres of timber stand improvement, production of 21 million tree seedlings, and 1,200 miles of road maintenance and improvement. Federal funding is authorized for this program through fiscal year 1991.

OTHER PROGRAMS

State and Private Forestry cooperates with other Federal agencies in administering several programs. Funds appropriated to these agencies are allocated to the Forest Service for forestry aspects of the programs.

Forestry Incentives

The Forestry Incentives Program (FIP) and the forestry practices of the Agricultural Conservation Program (ACP) provide incentives for owners of nonindustrial private forests to do reforestation and timber stand improvement. These landowners manage 58 percent of the commercial forest lands in the United States. These lands are currently producing at 63 percent of potential.

In 1983, 203,000 acres were treated under the FIP. Under ACP, 103,000 acres were treated. Over the past 5 years, FIP and ACP have accounted for approximately 50 percent of all reforestation on nonindustrial private lands.

Twelve States have selected a higher landowner cost-share requirement than the national program. Many landowners are willing to shoulder more of the costs, making it possible to treat more acreage with available funding. Five States have their own forestry incentives cost-share programs similar to the FIP, and several others are considering emulating the Federal incentives program. At least four States have laws requiring landowners to reforest their lands after harvest.

In order to make Federal and State forestry personnel and forest owners more knowledgeable about tax incentives available for increasing timber production, the Forest Service provides information regarding timber tax laws. In cooperation with the Wyoming State Forestry Division, the Forest Service in 1983 published "Reporting Federal Income Taxes on Timber Income," a tax guide for forest owners. Forest Service staff conducted tax training courses for State forestry agencies in Massachusetts, Michigan, Ohio, and most southeastern States. An ongoing study initiated in 1983 is evaluating the use of tax incentives and their relationship to other incentives.

Rural Community Fire Protection

The Rural Community Fire Protection (RCFP) program provides technical and financial assistance to train, organize, and equip rural fire departments. In fiscal year 1983, 3,065 applications were approved and funded from more than 30,000 submitted by rural communities.

Resource Conservation and Development

The Forest Service has responsibility for the forestry aspects of the Resource Conservation and Development (RC&D) Program, with overall leadership being assigned to the Soil Conservation Service. Funds allocated to the Forest Service in 1983 totaled $718,000 in 52 project areas. These funds were used to lead, staff, and finance training for woodland owners on how to manage their forests, promotion of good utilization of forest products,

assistance in prescribed burning, tree planting, natural trail development, forestry field day demonstrations, training in the proper use of fuelwood for residential and industrial purposes, Christmas tree management, and stabilization of logging roads.

Cooperative Watershed Activities

The Forest Service provides forestry technical leadership and information for small watershed and flood prevention projects, emergency watershed protection, and river basin studies. These programs are administered by the Soil Conservation Service. Objectives of the program include reducing flooding, erosion, and sedimentation, and solving local resource and economic problems. The funding levels negotiated with the Soil Conservation Service for forestry purposes were lower in fiscal year 1983 than in the previous year. The dollars allocated for flood prevention and watershed planning were 31 percent and 61 percent, respectively, below that which would accomplish the 1983 RPA program goals. Projects approved for river basin surveys decreased in number with a corresponding decrease of 35 percent in funding.

In 1983, planning by State and local sponsors, with technical and financial help for forestry work from the Forest Service, was concentrated on 44 small watersheds with allocations of $263,000 and 42 river basins with allocations of about $1.5 million. The Forest Service spent $4.2 million to implement forestry aspects of plans on 98 small watershed and flood prevention projects across the Nation.

A total of $2.5 million was allocated by the SCS to the Forest Service for emergency watershed protection projects in California, Hawaii, Utah, Nevada, Colorado, and Arkansas. The objective of these projects, located on both National Forest and private lands, is to alleviate the hazards to life and property resulting from natural disasters.

Forest Research

INTRODUCTION

The Forest Service, through its research program, is responsible for developing scientific and technical knowledge to enhance the economic and environmental values of America's 1.6 billion acres of forest and associated rangelands.

Research is conducted through eight regional Forest and Range Experiment Stations and the Forest Products Laboratory at Madison, Wisconsin (figure 53). More than 3,000 studies are in progress at any one time. Approximately 850 scientists are stationed at 75 locations throughout the States, Puerto Rico, and the Pacific Islands Trust Territory.

The research program is planned and coordinated with related efforts at the 60 forestry schools and the agricultural experiment stations at land-grant institutions throughout the United States. Forest Service scientists also work closely with researchers from other public agencies and the forest industry. Forest Service research is closely coordinated with and strongly supports National Forest System management and State and Private Forestry programs. Many of the scientific accomplishments described in this report will become part of the technology used in the management of National Forests and State and private lands. Through publications, symposia, workshops, and direct public contact, the Forest Service transfers its research findings to Federal, State, and local policymakers, and public and private land managers. (A detailed breakdown of fiscal year 1983 publications is presented by subject area in table 62).

The research programs also support international forestry through cooperation with other Federal agencies, the United Nations, and bilateral arrangements with a number of foreign countries.

The 1980 RPA program accorded high priority to research, and recognized that new or improved technology had much to contribute to increased production of goods and services from the Nation's forests and associated rangelands.

Twenty-three broad areas of research were selected for initiation or increased emphasis by 1985. The Forest Service is currently conducting some research in all 23 areas. In 1983, increased emphasis was placed on basic research, old-growth wildlife habitat in the Pacific Northwest, integrated pest management, and international trade.

In 1983, research appropriations totaled $108.1 million, approximately 9 percent of which supported cooperative studies by colleges, universities, other research organizations, and industry. In addition, the Forest Service received almost $2 million from outside sources for cooperative research. (A breakdown of the research budget, including funds expended for cooperative research, is shown in tables 63 and 64).

Figure 53

Forest and Range Experiment Stations, Forest Products Laboratory

Scope of the Research Program

The research program covers an extensive spectrum of biologic, economic, engineering, and social disciplines, and supports the mission and goals of the President, the Department of Agriculture, and the Forest Service. The research is generally long range and high risk. Research projects can be supportive of Federal action programs, such as management of National Forests, or directed toward critical consumer interests, such as lumber standards and fire safety. The goal of this research is to learn how society can best use and protect plant, animal, soil, water, and esthetic resources. In this endeavor, equal emphasis is placed on conservation of renewable resources to improve the environment, and productivity to meet the needs of a growing Nation.

Much of the research is national, and some international, in scope and extends to nearly every major terrestrial ecosystem. The geographic range of the program is from the tropics to the Arctic and from Hawaii and territories of the Pacific to Puerto Rico in the Atlantic.

Genetic Engineering of Tree Species

The Forest Service initiated research on genetic engineering in fiscal year 1983. This initial work consisted of preparing comprehensive problem analyses and plans in two areas:

(1) Nonsexual methods for breeding trees, including protoplast and nuclear fusion technology.

(2) Individual heritable traits (single gene or gene complexes) and recombinant DNA methodologies for transfer of genes in species of trees.

Future increases in the yield of forests could be strongly dependent on the genetic improvement of the trees. But the long generation time of trees has hindered progress of even the most modern breeding programs. This indicates that forestry could reap large benefits from the application of genetic engineering techniques —first, because there is so much potential improvement yet to be captured, and second, because tissue culture and gene-splicing techniques offer a way to circumvent the long generation cycle of trees.

It is now both possible and feasible to transfer single genes or gene complexes between similar as well as unlike organisms. Using these techniques, new strains of microorganisms as well as higher plants are being developed for an array of purposes and uses which was not possible or even feasible in the past. Genetic engineering can be employed to increase growth and productivity, improve resistance to insects and diseases, and make products such as interferon. A new multimillion-dollar industry has now been developed on this technology.

Although these techniques have only been applied to selected microorganisms and herbaceous plants, genetic engineering has direct application to an array of biological problems confronting forestry. Conventional tree breeding methods of improving productivity by increasing growth, wood quality, and resistance to insects and diseases are hindered and even prevented by sexual reproduction barriers that prevent the exchange of desirable genes between selected tree species. With appropriate genetic engineering methods such barriers can be overcome. Not all tree species have in their genetic makeup all the characteristics desirable for increased productivity. An example is the ability to fix nitrogen, which is present in certain tree species but not in others. With the rapid advances in recombinant DNA research of the last 6 years, the basic tools for applying genetic engineering to forestry are both feasible and possible. However, existing methodology will need to be modified and new techniques developed that are suitable for the unique problems associated with forest trees.

Acid Rain Research

In fiscal year 1983, the Forest Service continued to be concerned about the long-term impact of acid deposition on forest growth and vigor and on water quality. There is mounting evidence that growth and vigor of trees may decline because of the effects of acid deposition alone or in combination with other environmental factors. This phenomenon is now being observed extensively in the forests of western and central Europe.

The Forest Service has directed more than $1.6 million per year into research on this problem. The agency also recently completed its second year as a member of the National Acid Precipitation Assessment Program. In 1985, this program will produce the first national assessment of the effects of acid precipitation. Forest Service scientists are studying both aquatic and terrestrial effects of acid deposition. Some findings reported in fiscal year 1983 include the following:

— New England forests show that some soils are unable to neutralize acid deposition and could decrease one pH unit in 30-50 years. This may have a detrimental effect on the growth of trees. Studies on waters in the same region are documenting the tremendous variability of acidification.

— Other studies have begun to identify possible precursors to acid deposition.

— Studies of changes in the pH of streams in relation to storm intensity and duration are underway. Determination of the relative amounts of wet and dry deposition show that dry deposition (particulate such as dust or ash) is much more important than previously suspected.

— Preliminary findings of the impacts of air pollution, including acid rain, on species of trees in eastern

forests show impairment of several physiological and biochemical processes.

-- In Minnesota, scientists have found that the major source of acidity in rainfall is nitrates, not sulphates. These two chemicals come from different sources and have different impacts on forests and lakes.

-- Research in the Southeast shows little if any change in stream water chemistry in spite of precipitation that averages a pH of 4.5.

All of the preliminary results show the problem to be one of extreme complexity and one that merits both concern and continued investigation. Additional research is planned to help put acid deposition and its sources in proper perspective, and mitigate long-term impacts on the environment.

Gypsy Moth Research

The Forest Service continued to place strong emphasis on gypsy moth research in fiscal year 1983. In early February, a research planning workshop, jointly sponsored by the Northeastern Forest Experiment Station and Pennsylvania State University, was held to begin preparing a comprehensive gypsy moth research plan for the 1980's. This workshop brought together over 50 top scientists and other professionals interested in gypsy moth research. The Northeastern Station subsequently sponsored three additional planning workshops. These workshops have identified research needs and lines of research that should be accelerated or phased out. The final report from these workshops forms the basis for developing a comprehensive, integrated 5-year research program plan to be completed in early fiscal year 1984.

A new research work unit, established at Morgantown, West Virginia, was initiated in fiscal year 1983. The mission of this unit is to implement and evaluate silvicultural options to minimize gypsy moth damage in forests that are threatened by gypsy moth within the next few years.

Forest Service funding for gypsy moth research in fiscal year 1983 was $1.5 million. Some examples of research accomplishments in fiscal year 1983 are as follows:

-- Dispersal of newly hatched gypsy moth larvae on fine silken strands is the principal means for the natural spread of this insect. Research during 1983 has provided new understanding of this critical phenomenon, which pest managers must take into account in suppression or control activities.

-- Newly hatched gypsy moth larvae that contact human skin may produce severe allergenic responses in susceptible individuals. An outbreak of skin reactions was seen in the general population during the recent gypsy moth epidemic. The symptomatology of allergic responses was described and published for physicians to use in diagnosis and treatment.

-- Continued improvements are being made in maximizing the effectiveness of biological agents for controlling gypsy moth populations. The effect of Bacillus thuringiensis (Bt.), a microbial spray used for gypsy moth control on gypsy moth parasites, is being clarified. Bt. sprays may cause an increase in parasitism, although this may not always be beneficial. Improvements are being made in the formulation of Bt. and gypsy moth virus to enhance their performance against the gypsy moth.

-- Continued progress is being made toward development of integrated pest management strategies for the long-term regulation of the gypsy moth.

Cost Reduction Activities In Research

In fiscal year 1983, the Forest Service took several steps to improve efficiency and reduce costs by further streamlining its research organization.

Nine research locations were targeted for closure in fiscal year 1983. Specific language in the congressional appropriations bill prohibited closure of three of these. Subsequently, 6 locations were closed and 26 research work units, each with a specific mission, were terminated or combined with other units. Research support services have been merged with National Forest regional offices at Portland, Oregon, and Ogden, Utah. Support services of the Rocky Mountain Station and the Arapaho and Roosevelt National Forests at Ft. Collins, Colorado, have also been merged. Opportunities for further mergers are being assessed.

A study was initiated to evaluate alternatives for expanding research efforts with industry, associations, and other interested parties. Recommendations from this study will be made part of research management at all Forest Service experiment stations and the Forest Products Laboratory.

LAND AND RESOURCE PROTECTION RESEARCH

Fire and Atmospheric Sciences Research

The objectives of this activity are to prevent and control wildfires; reduce loss of life, property, and forest resources from wildfires; reduce weather-related losses of forest resources; and use prescribed fire to achieve forest and range objectives at reduced cost. Examples of accomplishments follow:

-- North Central Station fire scientists, in cooperation with the State of Wisconsin and Michigan State University, have developed a system that evaluates the impact of fire on forest resources in the Northeast. The system evaluates both the negative and positive impacts

of fire on timber, wildlife, recreation, ornamental trees, and crops.

— Fire researchers at the Northern Forest Fire Laboratory in Missoula, Montana, have developed a computer system that shows the probable location of lightning fires. The system sorts data from thousands of lightning strikes and the condition of forest fuels and displays in map form where fires are most likely to start. The system is being tested by both the Forest Service and the Bureau of Land Management.

— A publication titled "How To Predict the Spread and Intensity of Forest and Range Fires" combines knowledge attained from fundamental and applied research by Northern Forest Fire Laboratory scientists on fuels, weather, and fire behavior, and experience in quick and efficient field techniques. This publication is being used to train fire specialists in all the Nation's State and Federal land management agencies.

Forest Insect and Disease Research

The objectives of this activity are to enhance the productivity, value, and use of forest and rangeland resources, and to protect wood in use and storage by preventing or minimizing insect and disease-caused damage. Examples of accomplishments follow:

— Biological control of European pine sawfly took a leap forward in 1983 when the Environmental Protection Agency registered Neocheck-S, a naturally occurring viral disease lethal to the sawfly. Introducing this safe virus results in natural spread throughout sawfly populations and eliminates the need for chemical pesticides. Neocheck-S was developed at the Forest Service's Center for Biological Control in cooperation with university researchers (figure 54).

— Research on beetle and decay problems in log-kit homes has led to a series of guidelines for preventing such damage.

— Nursery managers in the Midwest can better cope with root rot problems in walnut seedlings thanks to cooperative research with two universities and the North Central Forest Experiment Station. This research has identified five fungi responsible for the root rots and has enabled scientists to recommend cultural and biological controls that are cheaper and safer than chemicals.

Renewable Resources Evaluation Research

The objective of this activity is to provide comprehensive, continuing information about the forest lands of the United States. Examples of accomplishments follow:

— A new review of the Nation's renewable resource situation shows that the basic outlook continues much the same. The Nation is faced with the prospect of a growing imbalance between the supply of forest, range, and water products and the quantities that people would like to consume.

— The Forest Products Laboratory surveyed U.S. households on their use of wood for home heating. During 1981, about 620 million dollars worth of wood was burned

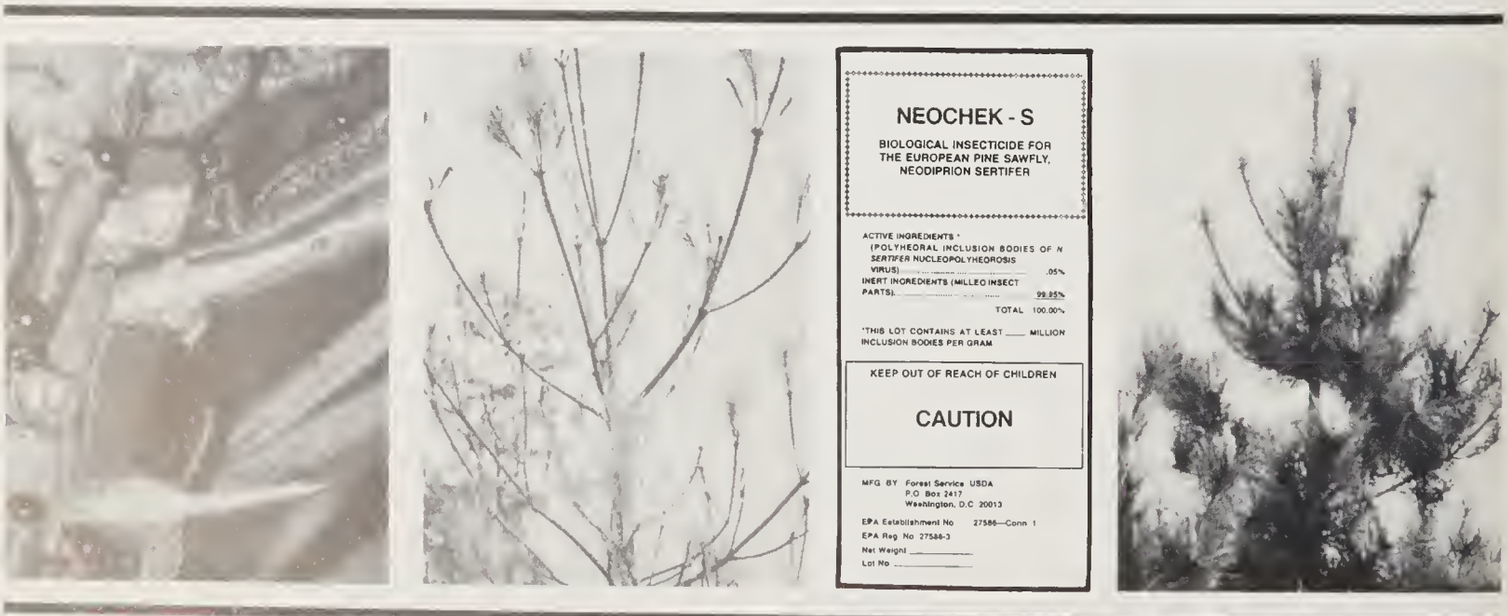


Figure 54. Newly registered Neochek-S equals trouble for the European pine sawfly but good news for forest trees.

for fuel, which is one-fourth of the amount used for all other wood products.

— Analysis of hardwood stands in the Piedmont reveals that these areas can be managed inexpensively for greater timber production. Nonindustrial private landowners can use this analysis to minimize their out-of-pocket stand treatment costs, increase incomes from timber harvesting, and upgrade future stand conditions.

— A new inventory system is currently being used to survey the natural resources on 32 million acres in Alaska. The system uses satellite imagery, aerial photos, and field plots to collect data on timber growth, vegetation, wildlife, fuels, and soils.

Renewable Resources Economics Research

The objective of this activity is to develop improved methods and analyses for the efficient management of the Nation's forest resources. Examples of accomplishments are as follows:

— Estimating the rate of change in timber values for stands going through gypsy moth outbreaks is less complex now that scientists have developed an equation to make this calculation (figure 55).

— A new model developed in the Southeast makes it easier to select the most profitable management options on forest land. This model can be run on inexpensive microcomputers, and can answer such questions as: Does fertilization pay, are pest management activities cost effective, and are timber stand improvements good investments?

— In Oregon, scientists have found that the economic impacts of increasing the supply of local Forest Service timber far surpass the economic benefits of importing logs from elsewhere. A supply impact model developed at the Pacific Northwest Station will help forest economists assess the significance of changes in capital flow and resources needed to produce goods and services in any forest-dependent area.

Surface Environment and Mining

The objectives of this activity are to evaluate the impact of mining activities on forests and rangelands and to develop economical and effective techniques for reclamation. Examples of accomplishments follow:

— Analyses of streams from surface-mined watersheds throughout the Appalachian coal mining region have shown that streams are less acid than commonly believed. This information is being used by miners, consultants, environmentalists, regulatory agencies, and others. The data are useful as a basis for future water quality studies.

— Revegetating bentonite mining sites is difficult because of low pH, soil salinity, high sodium and sulfur concentrations, and soil compaction. But reclamation efforts such as contouring, topsoil spreading, and seeding show some promise of overcoming undesirable soil chemistry.

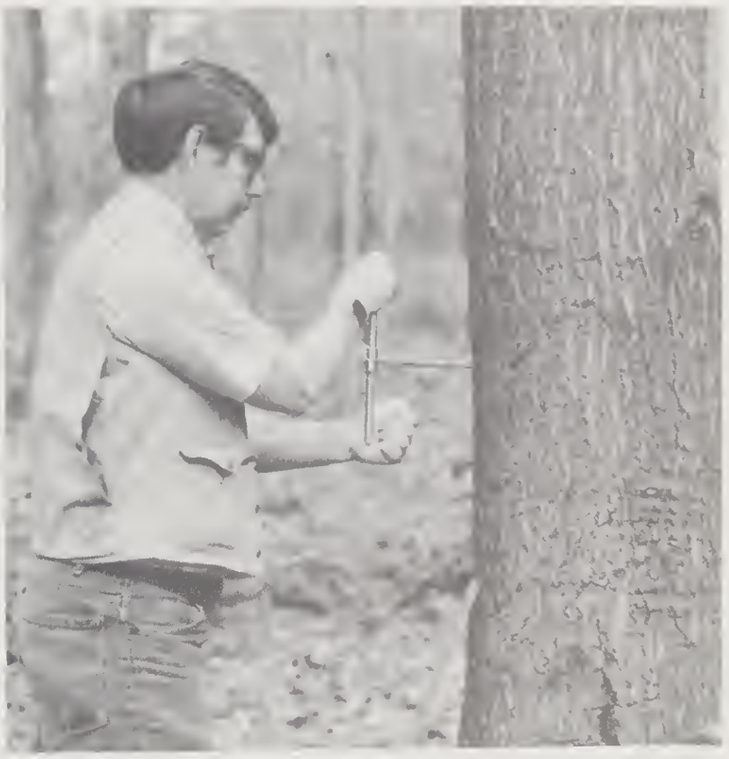


Figure 55. Forest plots infested with gypsy moth are remeasured twice a year to gather data on growth, mortality, and other aspects to estimate changes in timber value.

RENEWABLE RESOURCE MANAGEMENT AND UTILIZATION

Trees and Timber Management Research

The objectives of this activity are to increase the productivity and multiple-use benefits of forest lands, to enhance the growth and quality of trees, and to maintain the productivity of the land as required in the National Forest Management Act of 1976. Examples of accomplishments follow:

— The cost of controlling kudzu—an imported vine pest—is down from $150 per acre to as little as $75 per acre, thanks to herbicide techniques studied at the Southern and Southeastern Forest Experiment Stations. Researchers have screened more than 25 herbicides to find a cheap, effective one and a method of application suitable for nonindustrial forest landowners (figure 56).

— Southern Forest Experiment Station investigators have found that bigger loblolly pines can be grown simply by using seeds from nonlocal sources. Research in Arkansas over the past two and one-half decades suggests that 25-percent increases in yield are possible just by planting seeds grown in other parts of the South.

— Newly developed charts for shortleaf pine define the relationships between basal area of the trees and the number of trees. By depicting the prime density of the trees for maximum growth, the charts enable the best utilization of growing sites for this species.

— Experiments on the Wenatchee National Forest revealed that Douglas-fir and ponderosa pine can make startling gains in growth if particular herbicides are applied at planting time to suppress nearby vegetation (figure 57). One treatment led to a 650-percent increase in Douglas-fir stem volume at the end of 6 years, compared with nearby trees in untreated plots.

— To lessen the impact of western spruce budworm in the intermountain West, researchers have determined that creating tree and stand conditions less favorable to the pest is better than applying chemical controls.

Watershed Management Research

The objectives of this activity are to protect, manage, and improve forest and rangeland watersheds. Examples of accomplishments follow:

— Because the structure of subsurface rocks affects road stability, the Forest Service devised techniques to test rock strength and below-ground water content on slopes. These findings will yield substantial savings in road repair costs.

— Canadian and U.S. governmental agencies are using new data on acid rain to devise strategies for controlling it. It has been found that deposition containing nitrates (from burning gasoline) causes little damage to standing water and can be used by plants, while deposition of sulfates (from burning coal) can acidify lakes.

— Rocky Mountain Station scientists have discovered that harvesting trees in small circular patches over about a third of a watershed will trap blowing snow and increase local water yields without causing spring floods. This new cutting strategy could become important in the thirsty West.

Wildlife, Range, and Fish Habitat Research

The objectives of this activity are to maintain or improve wildlife and fish habitat; provide for species diversity and viable populations; increase forage production; improve stability and vegetative cover; and integrate wildife, fish, and livestock use with other

Figure 56. Kudzu vine can encroach on mature timber stands climbing trees over 100 feet tall to kill them within a few years.

Figure 57. Dense cover of grass and other herbaceous weeds, which if uncontrolled, often result in inadequate conifer regeneration.

forest and rangeland resource uses. Examples of accomplishments follow:

— A new way to survey bird populations may reduce costs of such surveys by 75 percent. The idea is to group all bird species that use similar parts of the habitat for the same purposes (feeding or nesting) and then count all birds, regardless of species, rather than individual species.

— A publication on sagebrush-grass vegetation management was prepared, the first in a series on management of intermountain rangelands. Its contents were distilled from 1,250 separate articles.

— After more than 15 years of comparative testing, the Intermountain Station has joined with the USDA Soil Conservation Service and Utah's Division of Wildlife Resources in making available three range plants for use on arid sites. These plants are especially useful for stabilizing disturbed soils and providing forage.

Forest Recreation Research

The objectives of this activity are to increase opportunities for, and benefits from, high quality outdoor recreation experiences, and to manage vegetation in and near urban areas. Examples of accomplishments follow:

— Fear of crime in urban parks and forests prevents many citizens from using this resource. Forest Service scientists have discovered what makes people feel safe—buildings, cars, and many other people nearby, as long as the park and nearby structures are well maintained and free of graffiti. Results of this research will help park planners improve park safety, both real and perceived.

— Managing 80 million acres of national wilderness falls to several agencies. A recent survey of managers of all wilderness units showed that most of these share problems of resource degradation and loss of solitude. Data in this report are helping researchers and managers to come up with solutions to these problems.

— One of the biggest problems facing river recreation managers is how to control river use levels in an equitable way. Through a survey of river recreationists, researchers found that if a "first-come, first-served" reservation system were used, no identifiable group of users would be put at a disadvantage. River managers can use these findings to develop more equitable ways to limit river recreation use where needed.

Forest Products Utilization Research

The objectives of this activity are to use all species of harvested timber more efficiently, as well as small trees and wood wastes, to reduce costs and energy consumption required for wood processing, to improve the performance of wood products, to expand opportunities for

wood products exports, and to facilitate forest management and environmental protection. Examples of accomplishments follow:

— Scientists at the Forest Products Laboratory have identified for the first time an enzyme active in breaking down lignin, the natural plastic that makes up 25 percent of wood. Discovery of the enzyme, along with increased understanding of the wood decay process, may lead to biological methods for controlling decay.

— Cooperative research at the Forest Products Laboratory and several universities has led to methods of predicting stiffness and strength of floor and wall components. Suppliers and users can now determine how changes in materials or construction will affect serviceability and safety of these components.

— Now that new wood-framed houses are better insulated, moisture problems in walls, floors, and roofs are causing decay. Studies of siding and insulation materials have led to recommendations on construction techniques that can help homeowners avoid this deterioration.

Forest Engineering Research

The objectives of this activity are to provide technological innovations and systems for more economical and energy-efficient activities such as harvesting, transportation, regeneration, and environmental conservation. Examples of accomplishments follow:

— Forest Service engineers have developed a new "chunking" machine that slices small-diameter trees, logging residues, and unmerchantable material into chunks much larger than conventional chips. The chunk wood has characteristics superior to wood chips for use as wood fuel or for the production of structural flakeboard or other composite wood products.

— Erosion from forest roads is the primary source of long-lasting sediment. Forest Service engineering researchers have developed techniques to predict the erosion expected for given soils, geologic conditions, vegetation, road specifications, and climatic events.

— In the interior West, small softwood timber has heretofore been uneconomical to harvest. But a newly devised harvesting system, with feller-bunchers, grapple skidders, whole-tree chippers and transporting equipment, makes it possible to utilize all harvested material and leave behind a clean logging site.

INTERNATIONAL FORESTRY

The objective of International Forestry is to provide leadership, coordination, and direction for Forest Service involvement in forestry worldwide. Examples of accomplishments follow:

— The Forest Service, cooperating with USDA's Foreign Agricultural Service, has expanded research on opportunities for increased foreign trade in U.S. timber and wood-based products.

— Forest Service personnel played leading roles in Food and Agriculture Organization (FAO) statutory bodies such as the North American Forestry Commission, Latin American Forestry Commission, and the Committee on Forest Development in the Tropics, resulting in more active and more fruitful programs. These activities were coordinated by the International Forestry staff.

— The Forestry Support Program, a joint Forest Service/Agency for International Development (AID) effort, was extended through 1988. It identifies sources of expertise for projects in forestry development in many nations.

— Interchanges on forestry matters were begun between the United States and Brazil and the United States and Mexico. Similar bilateral agreements with China, Greece, Portugal, India, and Canada have also been active during 1983.

FOREST BIOMASS ENERGY PROGRAM

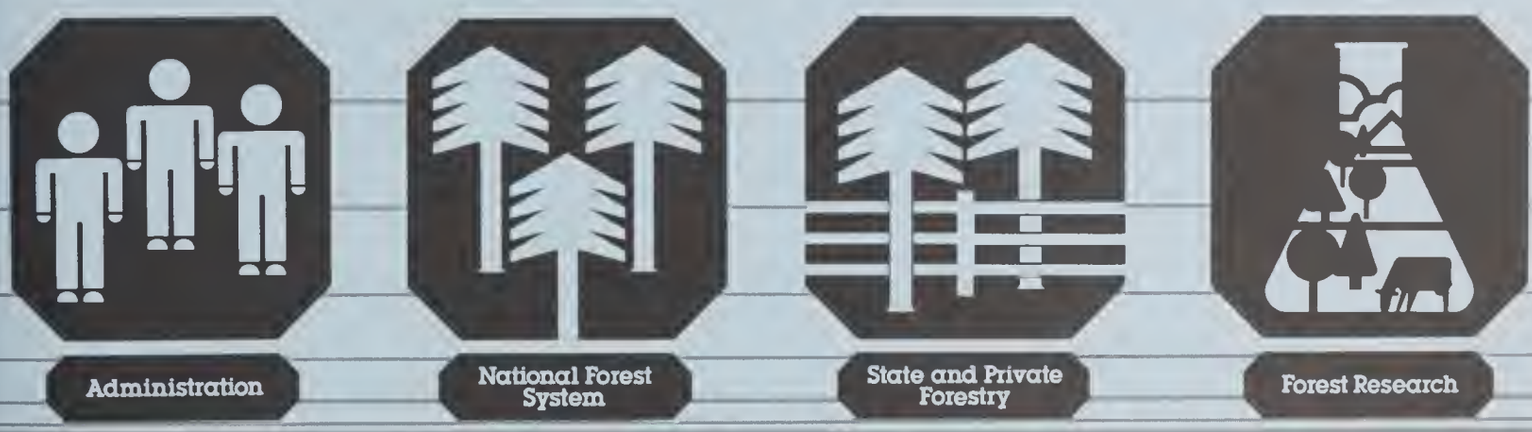
The objectives of this program are to promote energy conservation and to achieve a greater level of productivity on forest lands by better use of biomass for energy. Objectives are reached through the cooperation with USDA's Office of Energy, the Department of Energy, and through coordination of Forest Service research, development, and technology transfer activities with other agencies. Examples of accomplishments follow:

— Construction has begun on two wood-powered electric plants in California. Funds were provided to region 5 of the Forest Service for studies of the availability of biomass in four other localities where similar projects are under consideration.

— Twenty-six percent of Forest Service research projects now underway will provide information on biomass inventory and production and harvesting that will contribute to the development and use of wood for energy purposes. Nearly 700 Forest Service publications containing energy-related information have been listed.

— Seminars on woodlot management for fuel production and marketing were presented to State cooperators and consultants in Olympia, Washington, Lansing, Michigan, and Portsmouth, New Hampshire.

— The Forest Biomass Program coordinated the establishment of four regional biomass programs through the joint efforts of the Forest Service and the Department of Energy.


Administration
National Forest System
State and Private Forestry
Forest Research

List of Tables

Table 1.—Summary statement of receipts and expenditures—fiscal years 1982-83

	1983		1982		Percent Change 1982 to 1983	
	Receipts	Expenditures	Receipts	Expenditures	Receipts	Expenditures
	1,000 constant 1983 dollars					
National Forest programs						
Receipts						
Cash receipts and appropriation expenditures:						
Sale of timber and use of other forest rescources	**454,961**	**0**	322,579	0	+41	0
Use of National Grasslands and land utilization areas	**40,348**	**0**	46,207	0	-13	0
Timber sale area betterment (K-V) 1/	**134,351**	**0**	81,656	0	+65	0
Cooperative work for others	**33,859**	**0**	27,645	0	+22	0
Brush disposal	**47,844**	**0**	31,156	0	+54	0
Miscellaneous (sales, rentals, damages, etc.	**7,634**	**0**	5,177	0	+48	0
Restoration of forest lands and improvements	**214**	**0**	59	0	+263	0
Recreation permit sales and fees from designated areas	**4**	**0**	4	0	0	0
Timber salvage sales	**14,106**	**0**	7,184	0	+96	0
Subtotal	**733,321**	**0**	521,667	0	+41	0
Cash receipts from NFS lands collected in conjunction with, and deposited to, accounts of other agencies	**78,011**	**0**	73,293	0	+6	0
Non-cash income (roads built by timber purchasers)	**153,203**	**0**	172,827	0	-11	0
Total	**964,535**	**0**	767,787	0	+26	0
Expenditures:						
Operating costs	**0**	**1,398,285**	0	1,396,392	0	0
Capital outlay 2/	**0**	**316,737**	0	288,559	0	+10
Total	**0**	**1,715,022**	0	1,684,951	0	+2
Other Forest Service programs						
Forest Research programs						
Forest research	**0**	**110,775**	0	120,553	0	-8
Research construction	**0**	**36**	0	2,261	0	-98
Cooperative research work	**1,702**	**1,030**	1,057	1,172	+61	-12
Gifts, donations, and bequests for forest rangeland research	**0**	**0**	0	52	0	-100
Tongass timber supply fund	**0**	**1,963**	0	0	0	+100
Energy security reserve	**0**	**200**	0	573	0	-65
Federal photovoltaics utilization program	**0**	**148**	0	280	0	-47
Subtotal	**1,702**	**114,152**	1,057	124,891	+61	-9

See footnotes at end of table.

Table 1.—Summary statement of receipts and expenditures—fiscal years 1982-83—Continued

	1983		1982		Percent change 1982 to 1983	
	Receipts	**Expenditures**	Receipts	Expenditures	Receipts	Expenditures
			1,000 constant 1983 dollars			
State and Private Forestry programs						
State and private forestry cooperation	**0**	**64,211**	0	68,356	0	-6
Rural community fire protection	**0**	**3,128**	0	3,421	0	-9
Insect and disease control	**0**	**0**	0	365	0	-100
Flood prevention and watershed protection	**0**	**2,577**	0	1,749	0	+47
License programs (Woodsy Owl and Smokey Bear)	**70**	**15**	57	84	+23	-82
Forestry incentives and other programs 3/	**0**	**2,635**	0	5 220	0	-50
Subtotal	**70**	**72,566**	57	79,195	+23	-8
Human Resource programs						
Job Corps	**0**	**54,281**	0	55,163	0	-2
Young Adult Conservation Corps	**0**	**0**	0	21,322	0	-100
Senior Community Service Employment	**0**	**18,074**	0	16,685	0	+8
Subtotal	**0**	**72,355**	0	93,170	0	-22
Grand total, all programs	**966,307**	**1,974,095**	768,901	1,982,207	+26	0
Cash receipts distributed to States, counties and Puerto Rico						
Payments to States and Puerto Rico	**0**	**132,601**	0	242,702	0	-45
Payments to school funds, Arizona and New Mexico	**0**	**16**	0	127	0	-87
Payment to Minnesota	**0**	**711**	0	749	0	-5
Payments to counties, National Grasslands and Land Utilization Areas 4/	**0**	**10,329**	0	12,758	0	-19
Subtotal	**0**	**143,657**	0	256,336	0	-44
Internal equipment and supply service (Working Capital)	**102,403**	**86,493**	164,985	116,887	-38	-26
Reimbursements for work performed for government and others included above	**0**	**56,517**	0	55,477	0	+2

1/ K-V = Knutson-Vandenberg
2/ Estimated annual depreciation may be added in lieu of capital outlay to compare operating costs with receipts, 1983--$169,354; 1982--$164,985.
3/ Includes Resource Conservation and Development, River Basins, and Perticide Impact assessment funds transferred from ARS.
4/ Increase due to volume of minerals activity.

Table 2.—Summary statement of values and expenditures—fiscal year 1983

Item	Units 1/	Quantity	Average value per unit	Total value
				1,000 dollars
Value				
Minerals				
Common	Tons	-- 2/	--	--
Leasable	Tons	--	--	--
Energy	BBTU	603.6	2,056 3/	1,240,710
Timber	MBF	11,061,397	70.01 4/	774,370
Recreation 5/				
Developed	RVD	80,988	4.24 6/	343,168
Dispersed	RVD	103,640	4.04 6/	554,623
Wilderness and primitive	RVD	9,909	12.24 6/	121,286
Wildlife and fish				
Recreation	RVD	33,171	10.92 6/	362,179
Commercial	Pounds	170,000	26.33 6/	411,400
Range	AUM	8,788	8.22 6/	72,253
Water	AF	-- --	--	
Total values				3,879,989
Expenditures				
National Forest System				1,715,022
Forest Research				114,152
State and Private Forestry				72,566
Human Resource Programs				72,355
Total expenditures				1,974,095
Net value, total				1,905,894
Net value, National Forest System only				2,164,967

1/ BBTU = Billion British thermal units, MBF = thousand board feet, RVD = receation visitor days, AUM = animal unit month, AF = acre feet.
2/ -- = not available.
3/ Average values for 1982 as provided by DOE, FS.
4/ Actual value at time of sale.
5/ Exclusive of wilderness, wildlife and fish.
6/ 1980 RPA program values adjusted to 1983.

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Table 3.—Statement of receipts—fiscal year 1979-83

Receipts	1983	1982	1981	1980	1979
			1,000 constant 1983 dollars 1/		
Receipts from sale and use of forest resources					
Timber and forest products	**398,498**	264,326	648,307	762,996	1,104,023
Grazing	**10,183**	13,084	16,601	19,337	16,702
Land uses	**3,162**	3,012	2,700	2,850	2,824
Recreation	**27,801**	26,696	21,649	22,347	21,960
Power	**733**	715	541	595	572
Minerals	**54,932**	60,953	69,219	49,376	29,185
Subtotal	**495,309**	368,786	759,017	857,501	1,175,266
Receipts from deposits for expenditures on National Forests					
Timber sale area betterment	**134,351**	81,656	139,219	142,223	148,677
Timber salvage sales	**14,106**	7,184	13,251	17,727	16,524
Brush disposal	**47,844**	31,156	48,886	51,696	57,014
Restoration of improvements	**214**	59	108	241	44
Cooperative work	**33,859**	27,645	30,690	36,582	36,181
Subtotal	**230,374**	147,700	232,154	248,469	258,440
Other receipts					
Misc. (sale, rents, etc.)	**7,506**	4,974	4,518	-2,897 2/	11,806
Golden Eagle passports	**4**	4	4	6	5
Sale of personal property	**19**	44	45	57	144
Cooperative research	**1,702**	1,056	1,203	716	1,449
Royalties from sale of Smokey Bear and Woodsy Owl products	**70**	57	107	124	143
Acquisition of lands to complete land exchanges 3/	**109**	159	593	0	0
Subtotal	**9,410**	6,294	6,470	-1,994 2/	13,547

See footnotes at end of table.

Table 3.—Statement of receipts—fiscal year 1979-83—Continued

Receipts	1983	1982	1981 1/	1980	1979
			1,000 constant 1983 dollars 1/		
Other income					
Estimated collections by Dep. of Energy for power licenses on Public Domain National Forest land	411	1,057 4/	604	105	819
Estimated collections by Dep. of the Interior for mineral leases on Public Domain National Forest land 5/	77,600	72,236	70,245	267,502 (57,340)	216,417 (46,690)
Value of roads built by timber purchasers in lieu of cash	153,203	172,827	211,358	200,356	206,406
Subtotal 5/	231,214	246,120	282,208	467,963 (257,801)	423,642 (253,915)
Other net deposits 3/					
Moneys advanced on active timber sales:					
Bal. from previous year	143,580	243,717	299,460	0	0
Deposited current year	755,185	449,529	892,359	0	0
Trans. to other accounts	-634,231	-542,056	-933,752	0	0
Bal. on deposit	264,534	151,190	258,067	0	0
Amounts deposited pending disposition					
Bal. from previous year	12,483	13,028	8,675	0	0
Deposited current year	9,862	21,298	23,768	0	0
Trans. to other accounts	-7,053	-21,181	-18,648	0	0
Bal. on deposit	15,292	13,145	13,795	0	0
Subtotal	279,826	164,335	271,862	0	0
Total 5/	1,246,133 6/	933,235 6/	1,551,711 6/	1,571,939 (1,361,777)	1,870,895 (1,701,168)

1/ Implicit price deflator used for 1979-82. Columns may not add due to rounding.
2/ Includes receipt account adjustment of $2,700,000 from previous year.
3/ 1981 was first year of reporting.
4/ Increase due to an additional billing made by Federal Energy Regulatory Commission.
5/ Department of the Interior procedures for crediting mineral lease collections on National Forest System lands were revised in 1981. Previous years are adjusted and shown within parentheses.
6/ For comparison with past years, use total receipts, less other net deposits. Other net deposits not reported for previous years.

Table 4.—Statement of receipts—fiscal year 1983

Receipts	National Forests	Oregon and California grant lands	National Grasslands & L.U. Areas 1/	Other	Total
			1,000 dollars		
Receipts from sale and use of forest resources					
Timber and forest products	388,601	9,840	57		**398,498**
Grazing	8,179	4	2,000		**10,183**
Land uses	2,733	62	367		**3,162**
Recreation	27,787		14		**27,801**
Power	691		42		**733**
Minerals	17,064		37,868		**54,932**
Subtotal	445,055	9,906	40,348	0	**495,309**
Receipts from deposits for expenditures on National Forests					
Timber sale area betterment	134,351				**134,351**
Timber salvage sales	14,106				**14,106**
Brush disposal	47,844				**47,844**
Restoration of improvements	214				**214**
Cooperative work	33,859				**33,859**
Subtotal	230,374	0	0	0	**230,374**
Other receipts					
Misc. (sale, rents, etc.)				7,506	**7,506**
Golden Eagle passports 2/				4	**4**
Sale of personal property 2/				19	**19**
Cooperative research				1,702	**1,702**
Royalties from sale of Smokey Bear and Woodsy Owl products				70	**70**
Acquisition of lands to complete land exchanges				109	**109**
Subtotal	0	0	0	9,410	**9,410**

See footnotes at end of table.

Table 4.—Statement of receipts—fiscal year 1983

Receipts	National Forests	Oregon and California grant lands	National Grasslands & L.U. Areas 1/	Other	Total
			1,000 dollars		
Other income					
Estimated collections by Dep. of Energy for power licenses on Public Domain National Forest land	411				**411**
Estimated collections by Dep. of the Interior for mineral leases on Public Domain National Forest land	77,600				**77,600**
Value of roads built by timber purchasers in lieu of cash	153,203				**153,203**
Subtotal	231,214	0	0	0	**231,214**
Total	906,643	9,906	40,348	9,410	**966,307**
Other net deposits					
Moneys advanced on active timber sales					
Bal. from previous year	143,580				**143,580**
Deposited current year	755,185				**755,185**
Trans. to other accounts	-634,231				**-634,231**
Bal. on deposit	264,534				**264,534**
Amounts deposited pending disposition					
Bal. from previous year	12,483				**12,483**
Deposited current year	9,862				**9,862**
Trans. to other accounts	-7,053				**-7,053**
Bal. on deposit	15,292				**15,292**
Subtotal	279,826	0	0	0	**279,826**
Grand total	1,186,469	9,906	40,348	9,410	**1,246,133**

1/ Land Utilization Projects.
2/ These receipts are credited to the Department of the Interior.

Table 5.—Statement of expenditures—fiscal year 1983

	Total	Work for other public agencies (reimbursables)
	1,000 dollars	
State and Private Forestry		
Cooperation and general forestry assistance	64,211	3,182 5/
Resource conservation and development	674	0
Rural community fire protection grants	3,128	0
River basins	1,461	0
Flood prevention and watershed planning	2,577	0
Licensee programs, Smokey Bear, and Woodsy Owl	15	0
FIP, ACP, and miscellaneous	500	464
Subtotal	72,566	3,646
Human Resource Programs		
Job Corps	54,281	502
Senior citizens and miscellaneous	18,074	1
Subtotal	72,355	503
Total	1,974,095	56,517
Internal equipment and supplies service		
Working Capital Fund	86,493	86,493
Grand total	2,060,588	143,010

1/ Includes obligations of $88,333,774 for Reforestation Trust Fund.
2/ K-V = Knutson-Vandenberg Act
3/ Adjustment of amount reported in prior year. Obligations in the amount of $131,812,601 were incurred against nonfunded authority contained in P.L. 97-100.
4/ General administration also supports activities in Forest Research, Cooperation and General Forestry Assistance.
5/ Includes reimbursable expenditures for the Agricultural Conservation Program (ACP) and Forestry Incentives Program (FIP) for Agricultural Stabilization and Conservation Service.

Table 6.—Statement of expenditures—fiscal year 1979-83

	1983 1/	1982 1/	1981	1980	1979
		Million constant 1983 dollars 2/			
National Forest System	**1,715.0**	1,684.9	2,044.1	2,085.4	2,084.6 3/
Forest Research	**114.1**	124.9	147.3	143.0	155.8
State and Private Forestry	**72.6**	79.2	97.8	109.9	123.4
Human Resource Programs	**72.4**	93.2	139.5	188.9	212.6
Working Capital Fund	**86.5**	116.9	94.9	-- 4/	--
Total 5/	**2,060.6**	2,099.1	2,523.6	2,527.2	2,576.4

1/ All general administration expenditures are included in National Forest System for 1982 and 1983; for past years they are included in each line item.
2/ GNP implicit price delfator used for 1979-82.
3/ On behalf of the National Forest System, State and Private Forestry expended $8.7 million. This amount is included in the State and Private Forestry figure.
4/ -- = Not available as separate item.
5/ Columns may not add due to rounding.

Table 7.—Distribution of employees by program and occupational category selected fiscal years

	1983	1982	1981	1980	1975
Research					
Clerical	**571**	599	665	627	460
Technical	**1,042**	1,071	1,096	968	528
Administrative	**241**	259	275	302	246
Professional	**1,240**	1,266	1,346	1,452	1,408
Subtotal	**3,094**	3,195	3,382	3,349	2,642
State and Private Forestry					
Clerical	**58**	106	157	163	81
Technical	**30**	61	82	80	31
Administrative	**23**	34	46	42	28
Professional	**120**	229	366	347	256
Subtotal	**231**	430	651	632	396
National Forest System					
Clerical	**5,312**	5,440	5,884	6,361	6,411
Technical	**25,761**	25,331	29,116	30,036	28,774
Administrative	**2,777**	2,917	3,037	2,370	1,860
Professional	**9,988**	10,201	10,191	9,082	7,562
Subtotal	**43,838**	43,889	48,228	47,849	44,607
Total	**47,163**	47,514	52,261	51,830	47,645

Table 8.—Distribution of employees by tour of duty as reported in July of selected years

	1983	1982	1981	1980	1975
Permanent full-time	**30,752**	30,375	21,543	21,421	19,568
Other permanent	**5,325**	6,799	15,326	15,815	12,115
Temporary	**14,899**	15,624	19,053	24,043	18,076
Total	**50,976**	52,798	55,922	61,279	49,759

Table 9.—Summary of Forest Service Human Resource Programs—fiscal year 1983

Program	Program funding	Value of work accomplished	Persons served	Percent		Person years accomplished	Percent placement	Return per dollar invested
				Women	Minority			
	Million dollars							Dollars
Youth Conservation Corps 1/	3.4	4.8	2,426	47	16	394	-- 2/	1.41
Job Corps	54.4	17.6	8,756	9	59	3,866	88	--
Senior Community Service Employment Program 3/	16.8	26.2	5,107	35	21	2,189	12	1.56
Volunteers in the National Forests	Unfunded	21.1	44,212	30	10	1,700	--	--
Hosted programs	Unfunded	11.2	6,678	26	33	908	--	--
Total	74.6	80.9	67,179	--	--	9,057	--	--

1/ Figures listed are for the portion of the program opeated by the Forest Service.
2/ -- = not applicable.
3/ Statistics are for the July 1, 1982, through June 30, 1983, program year.

Table 10.—Summary of National Forest System accomplishments compared to funded output levels and 4-year average—fiscal year 1983

Resource Area	Activity	Unit of Measure 1/	1983 Funded	1983 Accomplished	1983 Percent of funded	1980-83 average accomplishment	1983 as percent of 4-year average
Resource							
Recreation	Visitor use	MM RVD's	240.0	227.7	92	230.7	95
Wilderness	Maintenance	MM acres	25.1	25.2	100	25.2	100
Wildlife and fish	Habitat improvement	M acres	329.6	309.8 2/	94	433.5	71
Range	Permitted grazing use	MM AUM's	9.8	10.1	103	9.9	102
Timber	Sales offering	B bd.ft.	11.0	11.3	103	11.7	97
	Silvicultural exams	MM acres	5.6	6.0	107	7.0	86
	Reforestation						
	Appropriated funds	M acres	192.9	193.2	100	215.5	90
	K-V funds 3/	M acres	174.6	168.5	104	184.8	91
	Timber stand improvement						
	Appropriated funds	M acres	244.7	270.6	110	266.7	101
	K-V funds	M acres	133.5	127.0	105	146.3	87
Soil and water	Resource improvement	Acres	6,616.6	8,976	136	14,476	61
Minerals	Leases and permits	Cases	25,601	30,335	118	26,576	114
Support							
	Trail construction/ reconstruction	Miles	377.0	444.5	118	502.6	88
	Road construction						
	Appropriated funds	Miles	1,293	2,016	156	1,506	134
	Purchaser credit	Miles	8,794	5,733 4/	65 4/	7,748 4/	74 4/
	Fuel management	M acres	132.0	334.6 5/	231 5/	337.6	93
	Land acquired						
	Purchase and donation	M acres	5.6	30.4	543	84.5	93
	Exchanges	M acres	87.9	118.6	135	115.5	36
	Landline location	Miles	5,428	6,085	112	6,126	99

1/ M = thousand, MM = million, B = billion.
2/ Includes 109,448 acres accomplished with Knutson-Vandenberg funds.
3/ K-V = Knutson-vandenberg Act.
4/ Accomplishment includes 662 miles turned back to Forest Service for construction in 1983 and a 1980-83 average of 1,239 miles.
5/ An additional 2,609 acres were accomplished in 1983 through human resource programs and 496,500 acres using brush disposal funds.

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Table 11.--National Forest System funding--fiscal year 1983 compared to 1980-83 average

	1983		1980-83	Percent of actual to
	Actual	RPA 1/	average 1/	3-year average
	1,000 constant 1983 dollars 2/			
Land and resource protection				
Minerals area management	22,598	38,681	18,525	122
Land management	19,935	49,729	21,655	92
Landline location	25,034	44,448	25,079	100
Maintenance of facilities	21,710	25,656	14,801	147
Forest fire protection	153,889	209,916	153,302	100
Fighting forest fires	1,000	3,701	75,626	1 3/
Cooperative law enforcement	5,174	8,382	4,597	113
Forest road maintenance	73,666	119,715	70,233	105
Forest trail maintenance	13,988	21,672	12,382	130
Subtotal	336,994	521,900	396,200	85
Renewable resource management and utilization				
Sales administration and management	162,125	241,856	167,865	97
Reforestation and stand improvement	161,963 4/	141,824	112,811 4/	143
Recreation use	99,774	194,648	98,801	101
Wildlife and fish habitat management	33,349	83,430	35,174	95
Range management	27,031	56,926	29,559	91
Soil and water management	28,713	76,817	35,478	81
Subtotal	512,955	795,501	479,688	107
General administration	260,915	296,004	281,183	93
Mount St. Helens 5/	(0)	(--)	(11,372)	
Youth Conservation Corps	3,400	60,000	16,900	20
Construction and land acquisition				
Construction of facilities 6/	51,007	113,095	28,109	181
Forest road construction	245,169	371,427	207,603	118
Forest trail construction	4,936	20,359	5,268	94
Forest roads purchaser construction 7/	(240,000)	(--)	(251,340)	(95)
Mount St. Helens 5/	(0)	(--)	(6,301)	
Chugach Natives, Inc. 5/	(9,000)	(--)	(3,040)	
Subtotal	301,112	504,881	240,980	125

See footnotes at end of table.

Table 11.—National Forest System funding—fiscal year 1983 compared to 1980-83 average—Continued

	1983		1980-83	Percent of
	Actual	RPA 1/	average 1/	actual to 3-year average
	1,000 constant 1983 dollars 2/			
Land acquisition 8/	**63,077**	--	41,810	151
Acquisition of lands for National Forests, special acts	**753**	724	688	109
Acquisition of lands to complete land exchange	**109**	314	302	36
Range betterment	**5,378**	8,000	6,730	80
Permanent appropriations	**296,819**	383,802	435,100	68
Trust funds	**170,027**	153,360	157,693	108
Total 9/	**1,951,539**	2,724,486	2,057,274	95

1/ In order that a comparison may be made with 1983 Actual, general administration has been eliminated from individual line items and is shown as a separate entry. Item not included in the RPA are marked "--".
2/ GNP implicit price deflator used for 1980-82.
3/ Percent of actual to 3-year average is low because the 3-year average includes supplemental appropriations. The Forest Service did not receive a supplemental fire appropriation in fiscal year 1983. Under a new procedure, actual expenses will be reimbursed the following year.
4/ Includes $104 million Reforestation Trust Fund dollars.
5/ Funds provided for unique circumstances, and are not included in comparison.
6/ Excludes construction of research facilities, which is included in Table 63.
7/ This account was taken off budget in 1982. For comparison, the amounts are shown as non-add items.
8/ Includes $6.2 million transferred from National Park Service.
9/ Excludes Mount St. Helens and Chugach Natives appropriations which were for unique circumstances and forest roads purchaser construction, which was taken off budget in 1982.

Table 12.—Summary of National Forest System accomplishments compared to RPA goals—fiscal year 1983

Resource area	Activity	Unit of measure 1/	1983 RPA goal	1983 Accomplished	1983 Percent of RPA accomplished	1981-83 average RPA goal	1981-83 average Accomplished	1981-83 average Percent of RPA accomplished
Final output 2/								
Timber	Sales offering	B bd. ft.	12.1	11.3	93	12.1	11.7	97
Recreation	Visitor use	MM RVD's	240	227.7	95	245.6	230.7	94
Range	Permitted grazing use	MM AUM's	10.0	10.1	101	10.0	9.9	99
Minerals	Applications, proposals and administration	Cases	21,200 3/	30,335	143	19,473	26,576	136
Intermediate output 4/								
Timber								
	Reforestation							
	Appropriated funds	MM acres	178	193.2	108	203	215.5	106
	K-V funds 5/	MM acres	291	168.5	58	260	184.8	71
	Timber stand improvement							
	Appropriation funds	MM acres	250	270.6	108	247	266.7	108
	K-V funds	MM acres	164	127.0	77	141	146.3	104
Wildlife	Habitat improvement	M acres	603 6/	309.8 7/	51	481.1	433.5	90
Wilderness	Maintenance	MM acres	40	25.2	63	37.3	25.2	68
Soil and water	Resource improvement	Acres	30,000	8,976	30	29,333.3	14,746	50
Trail construction/ reconstruction		Miles	2,282	444.5	19	1,709.3	502.6	29
Road construction/ reconstruction		Miles	715	2,016	282	470.3	1,506	320
Fuel management		M Acres	330	334.6 8/	101	266.6	337.6	127
Land purchase and donation		M acres	219	30.4	14	163.6	84.5	52

1/ M = thousand, mm = million, B = billion. RVD = recreation visitor day, AUM = animal unit month.
2/ Final output = Forest and rangeland goods and services purchased or consumed by the private sector or individuals consumers.
3/ Reported as cases in the RPA.
4/ Intermediate output = Work performed by the Forest Service which contributes to the production of final outputs.
5/ K-V = Knutson Vandenberg Act.
6/ RPA goal for 1983 was 3,016 acre equivalents, which is approximately 603 acres, the RPA 1981-83 average was 2,404.6 acre equivalents which is approximately 481.7.
7/ Includes 109,448 acres accomplished with Knutson-Vandenberg funds.
8/ An additional 2,609 acres were accomplished through human resouce programs and 496,500 acres using brush disposal funds.

Table 13.—Planned and approved minerals cases by Region—fiscal year 1983

Region	Cases		
	RPA goal	Planned	Accomplished
Northern	2,807	3,455	4,205
Rocky Mountain	1,690	2,195	2,773
Southwestern	1,508	1,784	2,447
Intermountain	2,700	3,946	3,251
Pacific Southwest	1,300	2,791	3,056
Pacific Northwest	6,390	3,499	4,609
Southern	3,275	3,764	5,883
Eastern	1,325	3,759	3,663
Alaska	205	408	448
Total	21,200	25,601 1/	30,335

1/ 24,500 was original 1983 target allocation; 25,601 includes midyear adjustments.

Table 14.—Energy mineral workload and production—fiscal years 1979–83

Fiscal year	Acres under lease	Energy-related cases	Energy-related cases in inventory	Oil production	Gas production	Coal production
	Millions			Barrels	1,000 cubic feet	Short tons
1979	24.9	9,801	6,000	11,130,200	213,250,000	6,240,000
1980	25.0	13,980	7,300	12,200,000	213,800,000	7,100,000
1981	25.2	15,037	5,200	13,350,000	214,100,000	12,400,000
1982	25.0	16,380	7,200	13,000,000	214,000,000	13,000,000
1983 1/	**34.4 2/**	**15,940**	**4,400 3/**	**13,000,000**	**205,000,000**	**14,300,000**

1/ All figures are estimated.
2/ The significant increase in acres under lease from fiscal year 1982 to fiscal year 1983 was due to two reasons. One, there were continued efforts to process lease applications in a timely fashion during the fiscal year. Two, the allowable acreage per lease was increased by the Secretary of the Interior and some of these new applications were processed.
3/ Estimate includes 2,400 unprocessed lease applications in congressionally designated wilderness and wilderness study areas, RARE II recommended wilderness areas, and RARE II further planning areas.

Table 15.—Land acquisition and exchange—fiscal year 1983

	Acres	Cases	Value
			Million dollars
Purchase	44,872	243	48.4
Exchange	118,576	148	106.4
Donation	22,683	36	2.4
Total	186,131	427	157.2

Table 16.—Miles of landline location by Region—fiscal year 1983

Region	Total boundary	1983 target	1983 accomplishment	Accomplished to date
Northern	30,664	427	501	3,591
Rocky Mountain	51,433	278	338	2,295
Southwestern	19,991	320	345	4,342
Intermountain	28,659	175	192	2,435
Pacific Southwest	29,500	761	854	5,154
Pacific Northwest	23,463	1,106	1,549	8,396
Southern	42,124	1,675	1,417	30,253
Eastern	42,642	623	750	4,165
Alaska 1/	2,042	63	139	664
Total	270,518	5,428	6,085	61,295

1/ Does not reflect changes due to Alaska Native Claims Settlement Act of 1971 (85 Stat. 688), as amended, and the Alaska Statehood Act of 1958 (72 Stat. 339), as amended. Because the land selections are overlapping and/or in a constant state of change, the Region is not keeping track of the boundary changes at this time.

Table 17.—Land administered by the Forest Service as of September 30, 1983

State, Commonwealth, or Territory 1/	National Forests, purchase units, research areas, and other areas	National Grasslands	Land Utilization Projects	Total
		Acres		
Alabama	644,438	0	40	**644,478**
Alaska	23,043,437	0	0	**23,043,437**
Arizona	11,270,465	0	0	**11,270,465**
Arkansas	2,479,273	0	0	**2,479,273**
California	20,415,783	0	19,222	**20,435,005**
Colorado	13,818,593	611,930	560	**14,431,083**
Connecticut	24	0	0	**24**
Florida	1,098,568	0	0	**1,098,568**
Georgia	861,592	0	9,340	**870,932**
Hawaii	1	0	0	**1**
Idaho	20,382,867	47,658	0	**20,430,525**
Illinois	261,454	0	0	**261,454**
Indiana	188,008	0	284	**188,292**
Kansas	0	108,177	0	**108,177**
Kentucky	673,116	0	0	**673,116**
Louisiana	597,839	0	0	**597,839**
Maine	50,977	0	260	**51,237**
Michigan	2,757,527	0	999	**2,758,526**
Minnesota	2,799,682	0	0	**2,799,682**
Mississippi	1,144,018	0	0	**1,144,018**
Missouri	1,455,542	0	13,104	**1,468,646**
Montana	16,765,792	0	0	**16,765,792**
Nebraska	257,401	94,332	0	**351,733**
Nevada	5,150,088	0	0	**5,150,088**
New Hampshire	705,674	0	0	**705,674**
New Mexico	9,210,821	136,412	240	**9,347,473**
New York	0	0	13,232	**13,232**
North Carolina	1,215,684	0	0	**1,215,684**
North Dakota	796	1,104,819	0	**1,105,615**
Ohio	177,398	0	0	**177,398**
Oklahoma	248,085	46,300	0	**294,385**
Oregon	15,511,799	105,224	856	**15,617,879**
Pennsylvania	510,620	0	0	**510,620**
Puerto Rico	27,846	0	0	**27,846**
South Carolina	610,409	0	0	**610,409**
South Dakota	1,134,225	863,071	0	**1,997,296**
Tennessee	625,575	0	0	**625,575**
Texas	665,082	117,542	0	**782,624**
Utah	8,045,151	0	0	**8,045,151**
Vermont	294,522	0	0	**294,522**
Virgin Islands	147	0	0	**147**
Virginia	1,632,307	0	0	**1,632,307**
Washington	9,053,419	0	738	**9,054,157**
West Virginia	972,971	0	0	**972,971**
Wisconsin	1,503,355	0	160	**1,503,515**
Wyoming	8,682,014	572,383	0	**9,254,397**
Total	186,944,385	3,807,848	59,035	**190,811,268**

1/ States not listed have no lands administered by the Forest Service.

Table 18.—Fuels treatment acreage accomplished by appropriation—fiscal year 1983

Region	RPA goal	Target (Forest fire protection funds)	Accomplishment			
			Forest fire protection funds	Volunteer and Contributed work	Brush disposal funds	Total
Northern	32,700	8,611	9,977	120	21,800	**31,897**
Rocky Mountain	39,900	5,308	6,766	0	6,000	**12,766**
Southwestern	44,700	20,426	26,480	0	64,500	**90,980**
Intermountain	22,000	8,188	13,716	202	59,500	**73,418**
Pacific Southwest	44,500	20,141	36,971	877	41,600	**79,448**
Pacific Northwest	37,700	20,000	26,360	105	300,000	**326,465**
Southern	105,200	46,230	208,441	0	0	**208,441**
Eastern	3,300	3,100	5,884	1,305	3,100	**10,289**
Total	330,000	132,004 1/	334,595 2/	2,609	496,500	**833,704**

1/ The target includes only investment acres (132,004).
2/ Accomplishment includes both investment (155,560 acres) and maintenance (179,035 acres).

Table 19.—Timber offered, sold, and harvested—fiscal years 1979-83

	1983 1/	1982	1981	1980	1979
Offered					
Volume (billion board feet)	**11.3**	11.1	12.2	12.4	12.4
Sold					
Number of sales	**235,585**	143,723	92,041	89,304	64,129
Volume (billion board feet)	**11.1**	10.0	11.5	11.3	11.3
Value (million dollars) 2/	**774.4**	614.2	1,767.7	1,948.7	1,962.6
Harvested					
Volume (billion board feet)	**9.2**	6.7	8.0	9.2	10.4
Value (million dollars) 3/	**649.6**	339.7	720.9	730.2	968.0

1/ Preliminary.
2/ This is the high bid value from all sales sold and includes stumpage, cost of reforestation, stand improvement, brush disposal, timber salvage, road maintenance and the road costs for roads to be built by the purchaser.
3/ This is the current stumpage rate for the actual volume removed and includes the reforestation and stand improvement costs. Timber salvage and brush disposal values and road costs are not included.

Table 20.—Timber offered, sold, and harvested by Region—fiscal years 1981-83

	1983			1982			1981		
	Offered 1/	Sold 2/	Harvested 3/	Offered	Sold	Harvested	Offered	Sold	Harvested
	Million board feet								
Northern	1,079.8	1,125.2	947.5	1,027.8	974.0	716.6	1,145.0	994.3	783.9
Rocky Mountain	375.9	338.2	306.2	389.8	351.5	250.0	401.3	403.9	273.9
Southwestern 4/	457.4	413.7	318.0	377.5	331.2	176.2	464.2	409.8	310.9
Intermountain 4/	428.0	370.4	361.8	413.6	348.0	261.6	424.3	314.8	323.4
Pacific Southwest	1,736.1	1,865.5	1,490.3	1,638.6	1,588.4	918.5	1,829.0	1,830.2	1,229.2
Pacific Northwest	4,746.3	4,915.6	3,868.2	4,856.8	4,641.6	2,525.4	5,418.1	5,482.1	3,125.9
Southern	1,309.6	1,318.6	1,096.0	1,201.6	1,124.9	816.3	1,242.5	1,219.3	1,141.1
Eastern	681.3	632.2	604.5	689.6	589.4	609.5	688.3	643.7	559.3
Alaska 3/	469.0	82.0	251.5	522.5	80.6	473.2	546.2	158.7	288.6
	11,283.4	11,061.4	9,244.0	11,117.8	10,029.6	6,747.3	12,158.9	11,456.8	8,036.2

1/ Sales volume offered for the first time in 1983.
2/ Does not include the volume of long-term sales released for harvesting. Includes miscellaneous small sales offered and/or sold prior to fiscal year 1983 that were reoffered and sold in fiscal year 1983.
3/ Includes the volume harvested on long-term sales.
4/ Includes long-term sales volume prepared in the offered column.

Table 21.—Number of sales, volume, and value of timber sold on National Forest lands by sale size class—fiscal years 1979-83

	Sale Size Class							
	To $300	$301-$2,000	$2,001-2,000MBF 1/	2,001-5,000MBF	5,001-15,000MBF	15,001MBF and over	Nonconvertibles 2/	Total Less Nonconvertibles 3/
1979								
Number of Sales	57,241	3,404	2,205	581	596	102	185,562	64,129
Volume (MBF)	285,391	377,749	1,503,917	1,960,737	5,120,541	2,082,032	0	11,330,367
Value ($1,000)	1,923.3	8,804.6	145,430.7	250,125.1	1,079,092.7	477,247.7	965.1	1,962,624.1
1980								
Number of Sales	81,072	4,715	2,252	590	596	79	183,360	89,304
Volume (MBF)	406,276	569,131	1,494,286	1,764,723	5,421,220	1,634,396	0	11,290,032
Value ($1,000)	3,175.5	10,126.5	125,231.0	220,310.8	1,254,629.7	335,184.5	1,256.7	1,948,658.0
1981								
Number of Sales	84,675	3,952	2,114	556	640	104	213,091	92,041
Volume (MBF)	359,040	427,385	1,314,813	1,791,408	5,602,699	1,961,455	0	11,456,800
Value ($1,000)	2,913.2	8,823.3	113,111.7	206,064.3	1,077,314.0	359,522.8	1,624.1	1,767,749.4
1982								
Number of Sales	131,498	8,805	2,223	605	500	92	216.9	143,723
Volume (MBF)	441,078	415,776	1,358,642	1,881,008	4,266,677	1,666,455	0	10,029,636
Value ($1,000)	3,580.3	8,365.4	82,587.9	139,849.1	292,693.0	87,112.2	1,755.2	614,187.9
1983								
Number of Sales	**226,181**	**5,684**	**2,499**	**574**	**563**	84	**214,429**	**235,585**
Volume (MBF)	**769,628**	**455,864**	**1,483,998**	**1,896,965**	**4,888,337**	**1,566,605**	**0**	**11,061,397**
Value ($1,000)	**5,081.3**	**9,116.0**	**97,819.5**	**132,413.9**	**421,334.7**	**108,605.1**	**1,715.7**	**774,370.5**

1/ MBF = Thousand board feet
2/ Non-convertible products include Christmas trees, cones, burls, et cetera.
3/ May not add due to rounding.

Table 22.—Timber sold and harvested by State—fiscal year 1983 1/

State or 2/ Commonwealth	Timber sold			Timber harvested 3/	
	Sales	Volume	Value 4/	Volume 5/	Value 4/
		MBF 6/	1,000 dollars	MBF	1,000 dollars
Alabama	243	75,214	5,101.6	76,714	6,438.7
Alaska	106	81,990	1,199.2	251,536	654.5
Arizona	12,223	241,756	10,266.2	218,533	9,693.2
Arkansas	2,518	213,880	15,171.3	154,785	14,736.6
California	58,399	1,870,374	123,463.8	1,495,547	136,012.9
Colorado	17,887	201,025	2,307.6	137,247	1,361.4
Florida	130	104,399	6,939.8	104,992	6,902.9
Georgia	620	55,245	2,800.2	54,941	2,976.6
Idaho	21,028	700,749	31,135.9	707,159	24,950.3
Illinois	47	21,900	456.5	12,774	281.7
Indiana	110	8,808	408.3	14,713	784.8
Kentucky	453	35,979	617.1	28,103	586.7
Louisana	354	185,887	14,842.5	112,980	10,434.4
Maine	18	4,306	118.1	5,723	95.7
Michigan	1,148	140,696	2,486.0	174,842	2,844.0
Minnesota	445	110,167	1,016.7	101,657	1,140.7
Mississippi	758	209,942	21,035.1	195,399	21,610.6
Missouri	1,021	62,497	1,628.6	62,706	1,908.4
Montana	7,338	631,603	20,468.5	486,964	11,953.0
Nebraska	22	252	1.7	84	.4
Nevada	1,117	2,618	15.9	2,816	28.5
New Hampshire	97	41,996	912.7	32,614	526.2
New Mexico	18,677	171,989	2,142.1	99,502	2,078.8
New York	53	420	35.1	271	2.9
North Carolina	478	76,426	1,927.1	67,392	2,057.1
North Dakota	17	102	1.1	82	1.0
Ohio	85	10,938	320.6	8,783	229.4
Oklahoma	109	33,792	2,657.2	25,140	1,766.4
Oregon	33,855	3,403,652	363,827.8	2,718,242	283,936.4
Pennsylvania	139	58,578	7,474.0	61,105	6,528.1
South Carolina	320	105,359	9,401.9	117,070	10,657.9
South Dakota	123	52,448	815.2	106,154	1,168.8
Tennessee	228	27,120	659.9	33,488	452.5
Texas	451	133,970	15,986.9	68,849	9,405.9
Utah	20,487	81,240	861.8	78,842	1,227.1
Vermont	276	11,138	205.6	6,837	186.3
Virginia	1,428	52,832	744.1	54,252	561.6
Washington	24,089	1,529,413	99,447.7	1,158,642	70,362.0
West Virginia	605	41,714	962.7	19,310	541.0
Wisconsin	271	127,622	2,089.3	105,083	1,600.9
Wyoming	7,812	141,360	2,417.0	82,164	966.1
Total 7/	**235,585**	**11,061,397**	**774,370.5**	**9,244,037**	**649,652.3**

1/ Excludes nonconvertible products such as Christmas trees, cones, burls, et cetera.
2/ States not listed had no timber sold or harvested in fiscal year 1983.
3/ Preliminary.
4/ Includes Knutson-Vandenberg and salvage sale receipts.
5/ Included in volume harvested are adjustments for fiscal years 1982 and 1983.
6/ MBF = thousand board feet.
7/ Columns may not add due to rounding.

Table 23.—Uncut timber volume under contract by Region—fiscal years 1979-83

Region	1983	1982	1981	1980	1979
			Million board feet 1/		
Northern	**3,845**	3,634	3,325	3,194	2,952
Rocky Mountain	**1,130**	1,157	1,057	1,034	885
Southwestern	**1,320**	1,150	995	846	842
Intermountain	**949**	890	750	942	913
Pacific Southwest	**7,278**	6,563	5,884	5,835	5,150
Pacific Northwest	**18,695**	18,125	16,295	14,446	13,943
Southern	**2,296**	2,296	1,988	1,910	1,926
Eastern	**1,802**	1,917	1,937	1,945	1,830
Alaska	**456**	365	440	344	251
Total	**37,771**	36,097	32,671	30,496	28,692

1/ Volume in local scale. Long-term sales not included. Long-term sales volume under contract in fiscal year 1983 was 7,402 million board feet.

Table 24.—Timber funding—fiscal years 1980-83 1/

	1983	1982	1981 2/	1980 2/
		Million constant 1983 dollars		
National Forest System				
Timber management	**125.5**	120.5	122.5	130.2
Harvest administration	**32.8**	46.4	50.9	37.4
Reforestation and stand Improvement	**162.0** 3/	99.3	92.4	96.1
Timber support	**83.5**	81.1	50.6	48.1
Subtotal	**403.8**	347.3	316.4	311.8
Road construction				
Forest Service construction	**189.6**	245.3	177.6	158.9
(A) Purchaser construction	**(192.1)**	(255.4)	(234.1)	(275.8)
Purchaser construction by the Forest Service	**44.9**	42.3	50.1	64.3
Subtotal	**234.5**	287.6	227.7	223.2
(B) Total, appropriated accounts	**638.3**	634.9	544.1	535.0
Special accounts				
(C) Brush disposal	**47.8**	31.1	48.8	49.4
(D) Timber salvage sales	**14.1**	7.2	13.3	17.7
Tongass timber supply fund	**42.5**	44.2	26.0	-- 4/
(E) Knutson-Vandenberg reforest and stand improvement	**86.7**	105.2	103.5	91.5
Subtotal	**191.1**	187.7	191.6	158.6
Total	**829.4**	822.6	735.7	693.6

1/ Letters preceding line items may be used with corresponding letters in table 25 for a funding/receipts comparison.
2/ General administration has been removed for comparability purposes.
3/ Includes Federal Emergency Jobs Program (PL 98-8) funding of $35 million.
4/ -- = not applicable.

Table 25.--Timber receipts--fiscal years 1980-83 1/

	1983	1982	1981 2/	1980
		Million constant 1983 dollars 3/		
(A) Value of roads built by timber purchasers in lieu of cash	**(153.2)**	(172.8)	(211.4)	(200.3)
(B) Sale and use of timber and forest products	**398.5**	264.3	648.3	763.0
(C) Brush disposal	**47.8**	31.2	48.8	51.7
(D) Timber salvage sales	**14.1**	7.2	13.3	17.7
(E) Timber sale area betterment	**134.4**	81.7	139.3	142.3
Total 4/	**594.8**	384.3	849.6	974.7

1/ Letters preceding line items may be used with corresponding letters in Table 24 for a funding/receipts comparison.
2/ Adjusted to reflect increase in receipts received after the 1981 Report of the Forest Service was published.
3/ GNP implicit price deflator used for 1980-82.
4/ Columns may not add due to rounding.

Table 26.—Timber sale costs and sold value comparisons—fiscal year 1983

Relationship to average timber sale costs 1/	National Summary	Regions								
		Northern	Rocky Mountain	South Western	Inter-Mountain	Pacific Southwest	Pacific Northwest	Southern	Eastern	Alaska
Percentage of average timber sale value to average timber sale cost 2/	207	122	36	121	56	167	418	248	75	2
Percentage of sold volume with value below average costs	37	45	75	45	74	38	27	32	74	79
Percentage of sold volume with value above average costs	63	55	25	55	26	62	73	68	26	21

1/ Timber sale costs include the costs for sale preparation and offer, sales administration, timber support from other resources, timber salvage sale fund, and 1/10 of road costs, excluding purchaser credit.
2/ Percentages less than 100 mean sale costs exceed the value of timber sold.

Table 27.—Reforestation funding and accomplishments by funding source—fiscal years 1979-83

	1983		1982		1981		1980		1979	
	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres
Appropriated 2/	**74.1** 3/	**193.2** 3/	61.6	221.6	65.7	217.9	66.8	229.4	62.4	225.0
Knutson-Vandenberg funds	**66.3**	**168.5**	66.2	161.2	59.8	204.8	67.2	204.6	71.6	221.1
Total	**140.4**	**361.7**	127.8	382.8	125.5	422.7	134.0	434.0	134.0	446.1

1/ All dollars are constant 1983. Appropriated funding amounts in 1982 and 1983 do not include general administration; prior years do.
2/ Does not include funds for nursery and tree improvement.
3/ Does not include 65,500 acres of site preparation for planting in fiscal year 1984, as well as 14,500 acres of site preparation for natural regeneration accomplished with $15 million of Federal Emergency Jobs Program funds, P.L. 98-8.

Table 28.--Reforestation program needs--fiscal years 1983-86

	Backlog	Current or anticipated	Total	Annual program appropriated funds 1/	
	1,000 acres			1,000 acres	Million dollars
10/1/82 balance	272	798	1,070		
Fiscal year 1983					
New needs 2/	0	+367	+367		
Adjustments 3/	-23	-25	-48		
Accomplishments 4/	-26	-350	-376	208	89.1
10/1/83 balance	223	790	1,013		
Fiscal year 1984					
New needs	0	+400	+400		
Projected accomplishments	-67	-295	-362	123	42.2
10/1/84 balance	156	895	1,051		
Fiscal year 1985					
New needs	0	+450	+450		
Projected accomplishments	-33	-317	-350	134	44
10/1/85 balance 5/	123	1,028 6/	1,151		

1/ Includes Reforestation Trust Fund pursuant to Public Law 96-451, as amended.
2/ New needs are the results of timber harvests, regeneration failures, and natural disasters such as fires, storms, insects, and diseases.
3/ The adjustments include acres regenerated through natural stocking and reduction by management decision (land classification, multiple use, and land use decisions). Forest planning has identified 101,000 acres as regenerated or to be used for purposes other than timber production.
4/ Includes 14,500 acres accomplished with $15 million of Federal Emergency Jobs Program funds, P.L. 98-8. Does not include 65,500 acres of site preparation for future planting.
5/ The 123,000 acres have not gone through the Forest planning process, but are currently uneconomical to plant or are within designated RARE II areas. They will be included in current needs if the Forest planning process includes the acres in the timber base. If the acres remain in the timber base, then treatment will occur when it becomes economical.
6/ Desirable level of working inventory.

Table 29.—Reforestation needs as of October 1, 1983, by State, Forest, and site productivity class

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Alabama					
Alabama	0	1,246	4,235	685	**6,166**
Alaska					
Chugach	18	18	40	0	**76**
Tongass-Chatham	0	0	1,337	2,715	**4,052**
Tongass-Ketchikan	0	0	0	12,293	**12,293**
Tongass-Stikine	0	0	0	6,738	**6,738**
Subtotal	18	18	1,377	21,746	**23,159**
Arizona					
Apache-Sitgreaves	765	3,144	0	0	**3,909**
Coconino	4,665	5,551	137	0	**10,353**
Kaibab	630	3,210	0	0	**3,840**
Prescott	0	356	0	0	**356**
Tonto	67	1,940	0	0	**2,007**
Subtotal	6,127	14,201	137	0	**20,465**
Arkansas					
Ouachita	0	22,166	3,116	0	**25,282**
Ozark and St. Francis	0	5,240	1,310	0	**6,550**
Subtotal	0	27,406	4,426	0	**31,832**
California					
Angeles	0	481	0	0	**481**
Cleveland	461	0	0	0	**461**
Eldorado	0	193	2,276	743	**3,212**
Inyo	110	463	0	0	**573**
Klamath	6,221	5,608	6,172	823	**18,824**
Lassen	0	803	719	0	**1,522**
Los Padres	226	211	50	0	**487**
Mendocino	132	1,454	768	89	**2,443**
Modoc	1,645	2,089	681	0	**4,415**
Plumas	43	5,980	766	436	**7,225**
Rogue River	0	0	6	0	**6**
San Bernardino	256	395	131	0	**782**
Sequoia	314	3,260	1,045	393	**5,012**
Shasta-Trinity	0	6,876	7,521	3,487	**17,884**

See footnotes at end of table.

Table 29.—Reforestation needs as of October 1, 1983, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Sierra	160	1,279	1,637	1,022	4,098
Siskiyou	0	0	1,072	0	1,072
Six Rivers	0	442	1,739	1,666	3,847
Stanislaus	0	1,235	3,114	686	5,035
Tahoe	2,809	2,979	1,918	2,072	9,778
Toiyabe	578	0	0	0	578
Subtotal	12,955	33,748	29,615	11,417	87,735
Colorado					
Arapaho and Roosevelt	0	1,439	0	0	1,439
Grand Mesa, Uncompahgre, and Gunnison	1,318	1,632	975	0	3,925
Manti-LaSal	0	0	0	0	0
Pike and San Isabel	548	588	406	0	1,542
Rio Grande	0	116	0	0	116
Routt	364	663	77	0	1,104
San Juan	5,900	12,248	0	0	18,148
White River	433	2,480	0	0	2,913
Subtotal	8,563	19,166	1,458	0	29,187
Florida					
Florida	9,350	6,098	9,909	554	25,911
Georgia					
Chattahoochee and Oconee	0	1,646	5,275	1,203	8,124
Idaho					
Boise	700	6,868	6,045	2,603	16,216
Caribou	0	521	364	0	885
Challis	494	164	0	0	658
Clearwater	7,223	11,249	15,413	53,136	87,021
Idaho Panhandle	22,820	4,327	26,214	32,170	85,531
Kootenai	0	0	1,161	613	1,774
Lolo	10	17	0	0	27
Nezperce	9,509	3,381	6,506	9,581	28,977
Payette	25	1,986	2,047	0	4,058
Salmon	1,994	1,395	0	0	3,389
Sawtooth	0	2,514	0	0	2,514
Targhee	1,153	4,763	0	0	5,916
Subtotal	43,928	37,185	57,750	98,103	236,966

See footnotes at end of table.

Table 29.—Reforestation needs as of October 1, 1983, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Illinois					
Shawnee	96	2,342	223	0	**2,661**
Indiana					
Hoosier	0	1,061	253	0	**1,314**
Kentucky					
Daniel Boone	40	2,534	1,860	104	**4,538**
Louisiana					
Kisatchie	0	174	5,079	9,003	**14,256**
Maine					
White Mountain	180	240	75	15	**510**
Michigan					
Hiawatha	1,496	1,871	262	112	**3,741**
Huron-Manistee	2,403	4,894	0	0	**7,297**
Ottawa	0	2,900	940	0	**3,840**
Subtotal	3,899	9,665	1,202	112	**14,878**
Minnesota					
Chippewa	95	62	0	0	**157**
Superior	1,081	7,472	1,081	196	**9,830**
Subtotal	1,176	7,534	1,081	196	**9,987**
Mississippi					
Mississippi	0	1,465	4,413	15,679	**21,557**
Missouri					
Mark Twain	3,042	5,514	452	0	**9,008**
Montana					
Beaverhead	412	3,131	61	0	**3,604**
Bitterroot	6,783	6,237	3,976	316	**17,312**
Custer	346	130	0	0	**476**
Deerlodge	3,641	1,296	613	60	**5,610**
Flathead	17,358	1,940	8,197	1,774	**29,269**
Gallatin	6,611	7,924	1,375	233	**16,143**
Helena	3,452	2,764	1,420	0	**7,636**
Idaho Panhandle	11	0	70	17	**98**
Kootenai	10,000	14,601	33,751	10,452	**68,804**
Lewis and Clark	2,750	2,202	780	4	**5,736**
Lolo	4,552	8,924	8,095	880	**22,451**
Subtotal	55,916	49,149	58,338	13,736	**177,139**

See footnotes at end of table.

Table 29.--Reforestation needs as of October 1, 1983, by State, Forest, and site productivity class--Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Nevada					
Toiyabe	595	0	0	0	595
New Hampshire					
White Mountain	420	560	176	35	1,191
New Mexico					
Carson	1,913	7,540	251	0	9,704
Cibola	1,264	13,258	0	0	14,522
Gila	456	1,292	0	0	1,748
Lincoln	0	455	235	0	690
Santa Fe	0	5,572	0	0	5,572
Subtotal	3,633	28,117	486	0	32,236
North Carolina					
North Carolina	172	2,774	2,107	2,525	7,578
Ohio					
Wayne	0	2,087	909	0	2,996
Oklahoma					
Ouachita	0	2,179	339	456	2,974
Oregon					
Deschutes	4,917	8,617	3,986	623	18,143
Fremont	4,187	2,082	1,046	241	7,556
Malheur	1,273	2,065	0	0	3,338
Mt. Hood	401	6,908	12,129	1,075	20,513
Ochoco	1,400	1,125	162	0	2,687
Rogue River	0	988	7,582	75	8,645
Siskiyou	259	960	9,858	1,954	13,031
Siuslaw	0	0	0	4,899	4,899
Umatilla	2,131	5,968	77	0	8,176
Umpqua	0	944	6,926	1,255	9,125
Wallowa-Whitman	2,683	5,549	808	118	9,158
Willamette	0	1,170	7,430	7,860	16,460
Winema	3,961	114	937	803	5,815
Subtotal	21,212	36,490	50,941	18,903	127,546

See footnotes at end of table.

Table 29.—Reforestation needs as of October 1, 1983, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
Pennsylvania					
Allegheny	• 0	3,031	3,775	0	**6,806**
Puerto Rico					
Caribbean	0	0	729	0	**729**
South Carolina					
South Carolina	0	642	2,860	3,010	**6,512**
South Dakota					
Black Hills	324	0	0	0	**324**
Tennessee					
Cherokee	0	470	225	484	**1,179**
Texas					
Texas	0	211	2,324	1,689	**4,224**
Utah					
Ashley	2,330	558	0	0	**2,888**
Dixie	527	878	0	0	**1,405**
Fishlake	168	0	0	0	**168**
Manti-LaSal	0	249	0	0	**249**
Sawtooth	0	0	0	0	**0**
Uinta	0	76	296	0	**372**
Wasatch	979	185	89	0	**1,253**
Subtotal	4,004	1,946	385	0	**6,335**
Vermont					
Green Mountain	1,320	141	110	0	**1,571**
Virginia					
George Washington	1,401	404	179	397	**2,381**
Jefferson	637	1,380	372	648	**3,037**
Subtotal	2,038	1,784	551	1,045	**5,418**
Washington					
Colville	46	2,294	1,883	9	**4,232**
Gifford Pinchot	44	7,164	10,343	979	**18,530**
Idaho Panhandle	26	0	999	1,081	**2,106**
Mt. Baker-Snoqualmie	20	491	5,395	1,367	**7,273**
Okanogan	1,286	2,045	0	0	**3,331**
Olympic	0	259	7,653	1,822	**9,734**
Umatilla	0	909	320	0	**1,229**
Wenatchee	20	4,651	1,976	126	**6,773**
Subtotal	1,442	17,813	28,569	5,384	**53,208**

See footnotes at end of table.

Table 29.—Reforestation needs as of October 1, 1983, by State, Forest, and site productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Acres by site productivity class 2/ 20-49	50-84	85-119	120+	Total acres
West Virginia					
George Washington	43	277	313	178	811
Monongahela	0	120	993	319	1,432
Subtotal	43	397	1,306	497	2,243
Wisconsin					
Chequamegon	1,233	4,027	1,583	92	6,935
Nicolet	875	2,144	770	425	4,214
Subtotal	2,108	6,171	2,353	517	11,149
Wyoming					
Bighorn	299	777	0	0	1,076
Bridger-Teton	538	2,604	1,044	0	4,186
Medicine Bow	6,485	513	0	0	6,998
Shoshone	107	0	0	0	107
Targhee	0	339	0	0	339
Subtotal	7,429	4,233	1,044	0	12,706
Total	190,030	329,438	286,347	207,098	1,012,913

1/ States not listed had no reforestation needs as of October 1, 1983.
2/ Site productivity class refers to the amount of wood produced in cubic feet per acre per year in a natural unmanaged stand.

Table 30.—Timber stand improvement funding and accomplishments by funding source—fiscal years 1979–83

	1983		1982		1981		1980		1979	
	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres	Million dollars 1/	1,000 acres
Appropriated 2/	**33.8** 3/	**270.6** 3/	23.8	240.2	36.5	257.0	45.1	298.9	46.0	323.8
Knutson-Vandenberg funds	**20.3**	**127.0**	15.7	120.8	23.2	139.4	24.3	158.1	23.6	153.3
Total	**54.1**	**397.6**	39.5	361.0	59.7	396.4	69.4	457.0	69.6	477.1

1/ All dollars are constant 1983. 1982 and 1983 funding amounts do not include general administration; prior years do.
2/ Does not include funds for nursery and tree improvement.
3/ Does not include 158,000 acres of timber stand improvement accomplished with $20 million of Federal Emergency Jobs Program funding, P.L. 98-8.

Table 31.—Timber stand improvement program needs—fiscal years 1983-86

	Work needs	Annual program, appropriated funds 1/	
	1,000 acres	1,000 acres	Million dollars
10/1/82 balance	**1,685**		
Fiscal year 1983			
New needs	**+458**		
Accomplishments 2/3/	**-555**	**429**	**53.8**
10/1/83 balance	1,588		
Fiscal year 1984			
New needs	+431		
Projected accomplishments	-330	176	25.5
10/1/84 balance	1,689		
Fiscal year 1985			
New needs	+400		
Projected accomplishments	-320	187	26.1
10/1/85 balance	1,769		

1/ Includes Reforestation Trust Fund pursuant to Public Law 96-451, as amended.
2/ Accomplishments do not include pruning. Fertilization is shown as both a need and an accomplishment beginning in fiscal year 1983.
3/ Includes 158,000 acres of timber stand improvement accomplished with $20 million of Federal Emergency Jobs Program funding, P.L. 98-8.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI	Release subtotal	Thinning subtotal	Fertilization subtotal
Alabama								
Alabama	0	3,123	2,082	0	**5,205**	5,205	0	0
Alaska								
Chugach	0	206	743	268	**1,217**	696	521	0
Tongass-Chatham	0	0	755	2,890	**3,645**	3,131	514	0
Tongass-Ketchikan	0	0	0	33,820	**33,820**	1,095	32,725	0
Tongass-Stikine	0	0	1,066	20,754	**21,820**	196	21,624	0
Subtotal	0	206	2,564	57,732	60,502	5,118	55,384	0
Arizona								
Apache-Sitgreaves	26,347	21,061	0	0	47,408	0	47,408	0
Coconino	19,992	32,165	0	0	**52,157**	34,571	17,586	0
Kaibab	2,519	22,887	0	0	25,406	408	24,998	0
Prescott	0	107	0	0	**107**	0	107	0
Tonto	3,449	7,693	0	0	11,142	0	11,142	0
Subtotal	52,307	83,913	0	0	136,220	34,979	101,241	0
Arkansas								
Ouachita	58	21,018	5,767	88	**26,931**	19,523	7,408	0
Ozark and St. Francis	0	9,137	2,284	0	**11,421**	5,746	5,675	0
Subtotal	58	30,155	8,051	88	**38,352**	25,269	13,083	0
California								
Angeles	0	968	0	0	**968**	596	372	0
Cleveland	1,459	2,320	0	0	**3,779**	255	3,524	0
Eldorado	0	125	2,351	1,795	**4,271**	3,318	953	0
Inyo	70	1,624	0	0	**1,694**	140	1,554	0
Klamath	4,452	15,447	13,662	4,309	**37,870**	18,700	19,170	0
Lassen	411	3,980	1,911	0	**6,302**	1,996	4,306	0
Los Padres	958	402	135	0	**1,495**	616	879	0
Mendocino	247	3,572	4,091	278	**8,188**	5,942	2,246	0
Modoc	950	12,503	1,092	0	**14,545**	7,119	7,026	400
Plumas	1,964	20,820	9,743	4,581	**37,108**	21,383	14,514	1,211

See footnotes at end of table.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI	Release subtotal	Thinning subtotal	Fertilization subtotal
San Bernardino	1,092	3,405	298	0	**4,795**	580	4,215	0
Sequoia	0	2,989	2,351	927	**6,267**	3,798	1,797	672
Shasta-Trinity	0	4,139	8,376	6,171	**18,686**	16,474	2,081	131
Sierra	157	2,288	2,228	1,746	**6,419**	3,897	2,522	0
Siskiyou	0	0	150	0	**150**	150	0	0
Six Rivers	0	7,257	13,922	9,239	**30,418**	23,317	7,071	30
Stanislaus	0	795	4,710	1,778	**7,283**	5,554	1,729	0
Tahoe	7,637	4,133	8,404	11,636	**31,810**	21,812	9,998	0
Toiyabe	8,482	0	0	0	**8,482**	2,628	5,854	0
Subtotal	27,879	86,767	73,424	42,460	**230,530**	138,275	89,811	2,444
Colorado								
Arapaho and Roosevelt	0	110,855	0	0	**110,855**	5,280	105,575	0
Grand Mesa, Uncompahgre, and Gunnison	2,180	8,215	2,610	0	**13,005**	9,059	3,946	0
Manti-LaSal	0	860	0	0	**860**	0	860	0
Pike and San Isabel	1,372	1,507	60	0	**2,939**	2,003	936	0
Rio Grande	3,492	21,827	3,784	0	**29,103**	16,158	12,945	0
Routt	595	1,097	0	0	**1,692**	1,342	350	0
San Juan	3,080	1,719	0	0	**4,799**	4,749	50	0
White River	588	767	0	0	**1,355**	534	821	0
Subtotal	11,307	146,847	6,454	0	**164,608**	39,125	125,483	0
Florida								
Florida	628	2,926	196	0	**3,750**	1,035	605	2,110
Georgia								
Chattahoochee and Oconee	0	3,200	3,303	552	**7,055**	5,577	1,478	0
Idaho								
Boise	0	8,150	17,669	280	**26,099**	7,118	18,981	0
Caribou	0	973	327	0	**1,300**	345	955	0
Challis	456	208	0	0	**664**	0	664	0
Clearwater	2,596	280	4,988	13,859	**21,723**	1,495	20,228	0

See footnotes at end of table.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI	Release subtotal	Thinning subtotal	Fertilization subtotal
Idaho Panhandle	8,847	5,787	37,655	47,792	**100,081**	19,417	80,664	0
Kootenai	0	0	375	251	**626**	488	138	0
Nezperce	4,851	660	3,791	1,788	**11,090**	1,591	9,499	0
Payette	170	1,700	3,140	0	**5,010**	744	4,266	0
Salmon	789	575	0	0	**1,364**	0	1,364	0
Sawtooth	30	346	0	0	**376**	0	376	0
Targhee	99	505	0	0	**604**	0	604	0
Subtotal	17,838	19,184	67,945	63,970	**168,937**	31,198	137,739	0
Illinois								
Shawnee	531	14,741	1,239	190	**16,701**	5,974	10,727	0
Indiana								
Hoosier	0	4,961	610	325	**5,896**	2,998	2,898	0
Kentucky								
Daniel Boone	363	4,807	5,183	1,006	**11,359**	6,546	4,810	3
Louisiana								
Kitsatchie	0	136	1,447	2,139	**3,722**	3,404	318	0
Maine								
White Mountain	24	406	100	15	**545**	389	156	0
Michigan								
Hiawatha	426	2,232	342	0	**3,000**	1,800	1,200	0
Huron-Manistee	648	3,875	236	30	**4,789**	3,047	1,742	0
Ottawa	0	1,040	349	0	**1,389**	1,340	49	0
Subtotal	1,074	7,147	927	30	**9,178**	6,187	2,991	0
Minnesota								
Chippewa	1,427	993	0	0	**2,420**	2,420	0	0
Superior	1,097	7,578	1,097	200	**9,972**	8,503	1,469	0
Subtotal	2,524	8,571	1,097	200	**12,392**	10,923	1,469	0

See footnotes at end of table.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal
Mississippi								
Mississippi	20	159	743	3,439	**4,361**	2,131	1,040	1,190
Missouri								
Mark Twain	4,849	8,513	282	0	**13,644**	9,057	4,587	0
Montana								
Beaverhead	1,384	3,428	1,029	38	**5,879**	1,013	4,866	0
Bitterroot	2,473	1,793	2,335	41	**6,642**	606	6,036	0
Custer	189	326	187	0	**702**	45	657	0
Deerlodge	9,556	2,418	615	0	**12,589**	346	12,243	0
Flathead	2,900	4,758	15,909	3,811	**27,378**	1,843	25,535	0
Gallatin	161	3,652	748	865	**5,426**	345	5,081	0
Helena	1,569	1,805	2,606	118	**6,098**	1,010	5,088	0
Idaho Panhandle	0	0	300	156	**456**	15	441	0
Kootenai	3,143	7,482	21,931	10,291	**42,847**	1,215	41,632	0
Lewis and Clark	2,117	611	68	0	**2,796**	398	2,398	0
Lolo	3,672	3,779	6,344	991	**14,786**	1,280	13,506	0
Subtotal	27,164	30,052	52,072	16,311	**125,599**	8,116	117,483	0
Nevada								
Humboldt	0	25	0	0	**25**	25	0	0
Toiyabe	1,000	0	0	0	**1,000**	300	700	0
Subtotal	1,000	25	0	0	**1,025**	325	700	0
New Hampshire								
White Mountain	56	944	220	35	**1,255**	891	364	0
New Mexico								
Carson	16,456	12,555	1,533	0	**30,544**	2,192	28,352	0
Cibola	0	18,527	0	0	**18,527**	0	18,527	0
Gila	15,745	54,940	5,000	480	**76,165**	1,025	75,140	0
Lincoln	0	913	494	0	**1,407**	0	1,407	0
Santa Fe	0	35,309	0	0	**35,309**	700	34,609	0
Subtotal	32,201	122,244	7,027	480	**161,952**	3,917	158,035	0

See footnotes at end of table.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal
North Carolina								
North Carolina	0	1,643	610	2,564	**4,817**	3,961	856	0
Ohio								
Wayne	0	4,584	550	235	**5,369**	1,720	3,649	0
Oklahoma								
Ouachita	26	2,870	58	151	**3,105**	1,962	1,143	0
Oregon								
Deschutes	121	11,157	3,075	51	**14,404**	6,197	8,207	0
Fremont	4,220	2,702	891	136	**7,949**	2,438	5,511	0
Malheur	8,068	3,128	0	0	**11,196**	164	11,032	0
Mt. Hood	0	2,494	5,113	809	**8,416**	683	7,733	0
Ochoco	4,673	132	0	0	**4,805**	1,471	3,334	0
Rogue River	0	0	7,812	0	**7,812**	7,042	770	0
Siskiyou	15	2,394	17,751	6,270	**26,430**	20,094	6,336	0
Siuslaw	0	0	0	6,753	**6,753**	3,938	2,815	0
Umatilla	2,388	2,370	0	0	**4,758**	954	3,804	0
Umpqua	0	4,175	15,416	3,101	**22,692**	7,569	14,145	978
Wallowa-Whitman	3,649	5,450	728	53	**9,880**	1,483	8,397	0
Willamette	0	232	7,769	19,036	**27,037**	3,192	10,236	13,609
Winema	5,175	5,340	6,036	817	**17,368**	707	16,661	0
Subtotal	28,309	39,574	64,591	37,026	**169,500**	55,932	98,981	14,587
Pennsylvania								
Allegheny	0	676	1,530	0	**2,206**	0	2,206	0
Puerto Rico								
Caribbean	0	0	0	1,700	**1,700**	1,700	0	0
South Carolina								
South Carolina	0	242	1,451	1,960	**3,653**	1,117	1,036	1,500
South Dakota								
Black Hills	23,538	0	0	0	**23,538**	0	23,538	0
Tennessee								
Cherokee	0	2,624	1,065	1,862	**5,551**	3,126	2,425	0

See footnotes at end of table.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	Total TSI 3/	Release subtotal	Thinning subtotal	Fertilization subtotal
Texas								
Texas	0	74	1,194	806	**2,074**	477	1,523	74
Utah								
Ashley	4,272	390	0	0	**4,662**	305	4,357	0
Dixie	2,498	3,032	0	0	**5,530**	576	4,954	0
Fishlake	0	116	0	0	**116**	0	116	0
Manti-LaSal	0	2,082	0	0	**2,082**	0	2,082	0
Sawtooth	30	346	0	0	**376**	0	376	0
Uinta	0	0	111	0	**111**	0	111	0
Wasatch	727	500	407	0	**1,634**	0	1,634	0
Subtotal	7,527	6,466	518	0	**14,511**	881	13,630	0
Vermont								
Green Mountain	6,748	645	1,041	0	**8,434**	2,987	5,447	0
Virginia								
George Washington	195	259	132	532	**1,118**	488	630	0
Jefferson	132	754	1,144	1,404	**3,434**	1,762	1,672	0
Subtotal	327	1,013	1,276	1,936	**4,552**	2,250	2,302	0
Washington								
Colville	0	2,082	3,373	661	**6,116**	2,074	4,042	0
Gifford Pinchot	247	8,795	15,515	8,072	**32,629**	237	24,381	8,011
Idaho Panhandle	46	0	472	1,418	**1,936**	289	1,647	0
Mt. Baker-Snoqualmie	38	2,549	6,577	1,948	**11,112**	520	6,677	3,915
Okanogan	2,038	3,260	0	0	**5,298**	1,269	4,029	0
Olympic	109	773	11,382	2,951	**15,215**	519	7,647	7,049
Umatilla	85	1,402	0	0	**1,487**	0	1,487	0
Wenatchee	3,430	15,216	2,593	36	**21,275**	6,822	14,453	0
Subtotal	5,993	34,077	39,912	15,086	**95,068**	11,730	64,363	18,975

See footnotes at end of table.

Table 32.—Timber stand improvement needs as of October 1, 1983, by State, Forest, and cubic foot productivity class—Continued

State, Commonwealth, or Territory 1/ National Forest	Cubic foot productivity classes 2/ 20-49	50-84	85-119	120+	**Total TSI 3/**	Release subtotal	Thinning subtotal	Fertilization subtotal
West Virginia								
George Washington	0	163	136	169	**468**	282	186	0
Jefferson	0	172	136	0	**308**	100	208	0
Monongahela	0	220	2,000	542	**2,762**	1,562	1,200	0
Subtotal	0	555	2,272	711	**3,538**	1,944	1,594	0
Wisconsin								
Chequamegon	0	1,058	903	99	**2,060**	1,789	271	0
Nicolet	20	1,040	356	0	**1,416**	1,106	310	0
Subtotal	20	2,098	1,259	99	**3,476**	2,895	581	0
Wyoming								
Bighorn	29,530	1,102	0	0	**30,632**	28,194	2,438	0
Black Hills	2,750	0	0	0	**2,750**	0	2,750	0
Bridger-Teton	0	1,471	1,856	0	**3,327**	0	3,327	0
Medicine Bow	6,021	2,431	0	0	**8,452**	3,882	4,570	0
Shoshone	6,340	2,286	0	0	**8,626**	0	8,626	0
Targhee	0	15	0	0	**15**	0	15	0
Wasatch	0	15	0	0	**15**	0	15	0
Subtotal	44,641	7,320	1,856	0	**53,817**	32,076	21,741	0
Total	296,952	683,488	354,149	253,108	**1,587,697**	471,397	1,075,417	40,883

1/ States not listed had no timber stand improvement needs as of October 1, 1983.
2/ Cubic foot productivity class refers to the cubic feet of wood produced per acre per year in a natural unmanaged stand.
3/ TSI = timber stand improvement

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	**Total refor.** 2/	Release	Pre-commercial thinning	Fertili-zation	**Total TSI** 2/
Alabama									
Alabama	2,378	0	857	0	**3,235**	2,042	0	0	**2,042**
Alaska									
Chugach	12	0	0	309	**321**	0	25	0	**25**
Tongass-Chatham	0	0	0	1,659	**1,659**	602	696	0	**1,298**
Tongass-Ketchikan	0	0	56	5,834	**5,890**	413	1,543	0	**1,956**
Tongass-Stikine	125	0	0	5,198	**5,323**	0	1,730	0	**1,730**
Subtotal	137	0	56	13,000	**13,193**	1,015	3,994	0	**5,009**
Arizona									
Apache-Sitgreaves	780	0	139	0	**919**	0	11,463	0	**11,463**
Coconino	32	0	0	0	**32**	1,585	4,056	0	**5,641**
Coronada	0	0	0	0	**0**	0	646	0	**646**
Kaibab	105	0	0	0	**105**	705	14,555	0	**15,260**
Prescott	0	0	0	0	**0**	310	548	0	**858**
Tonto	0	0	0	0	**0**	0	2,675	0	**2,675**
Subtotal	917	0	139	0	**1,056**	2,600	33,943	0	**36,543**
Arkansas									
Ouachita	1,213	430	540	0	**2,183**	12,569	1,179	0	**13,748**
Ozark and St. Francis	3,424	0	0	0	**3,424**	5,803	4,632	0	**10,435**
Subtotal	4,637	430	540	0	**5,607**	18,372	5,811	0	**24,183**
California									
Angeles	0	0	0	0	**0**	4	20	0	**24**
Eldorado	0	0	0	0	**0**	0	35	0	**35**
Inyo	0	0	0	0	**0**	471	559	0	**1,030**
Klamath	1,187	0	0	0	**1,187**	685	251	0	**936**
Lassen	838	0	0	0	**838**	0	2,638	0	**2,638**
Mendocino	88	0	0	0	**88**	65	0	0	**65**
Modoc	1,203	0	0	0	**1,203**	1,203	409	0	**1,612**

See footnotes at end of table.

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Total TSI 2/
San Bernardino	105	0	0	0	**105**	60	381	0	**441**
Sequoia	0	0	85	0	**85**	0	0	0	**0**
Shasta-Trinity	1,167	0	0	0	**1,167**	0	0	0	**0**
Six Rivers	2,323	0	0	0	**2,323**	849	889	0	**1,738**
Stanislaus	55	0	0	0	**55**	12	0	0	**12**
Tahoe	27	0	0	0	**27**	0	0	0	**0**
Toiyabe	0	0	0	0	**0**	0	677	0	**677**
Subtotal	6,993	0	85	0	**7,078**	3,349	5,859	0	**9,208**
Colorado									
Arapaho and Roosevelt	220	0	0	547	**767**	0	2,464	0	**2,464**
Grand Mesa, Uncompahgre, and Gunnison	240	1,450	167	0	**1,857**	434	1,732	0	**2,166**
Manti-LaSal	0	0	0	500	**500**	0	0	0	**0**
Pike and San Isabel	24	0	0	0	**24**	225	1,863	0	**2,088**
Rio Grande	920	0	0	0	**920**	0	908	0	**908**
Routt	0	0	0	0	**0**	107	721	0	**828**
San Juan	2,321	0	0	428	**2,749**	345	0	0	**345**
White River	270	0	0	20	**290**	452	5,572	0	**6,024**
Subtotal	3,995	1,450	167	1,495	**7,107**	1,563	13,260	0	**14,823**
Florida									
Florida	7,310	5,046	0	0	**12,356**	0	0	2,956	**2,956**
Georgia									
Chattahoochee and Oconee	4,771	0	1,800	0	**6,571**	6,827	55	0	**6,882**
Idaho									
Boise	614	0	0	0	**614**	2,930	5,568	0	**8,498**
Caribou	0	0	0	0	**0**	0	0	0	**0**
Challis	74	0	85	0	**159**	0	300	0	**300**
Clearwater	1,134	0	22	603	**1,759**	803	1,234	0	**2,037**

See footnotes at end of table.

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	**Total refor.** 2/	Release	Pre-commercial thinning	Fertili-zation	**Total TSI** 2/
Idaho Panhandle	1,700	0	580	54	**2,334**	1,079	7,113	0	**8,192**
Kootenai	0	0	0	0	**0**	0	211	0	**211**
Nezperce	796	0	15	59	**870**	690	502	0	**1,192**
Payette	826	0	0	0	**826**	0	0	0	**0**
Salmon	102	0	0	17	**119**	0	236	0	**236**
Sawtooth	0	0	0	0	**0**	30	6	0	**36**
Targhee	606	0	79	0	**685**	261	840	0	**1,101**
Subtotal	5,852	0	781	733	**7,366**	5,793	16,010	0	**21,803**
Illinois									
Shawnee	232	0	124	0	**356**	208	247	0	**455**
Indiana									
Wayne-Hoosier	1,090	0	303	0	**1,393**	128	127	0	**255**
Kentucky									
Daniel Boone	2,431	0	2,649	0	**5,080**	4,169	685	0	**4,854**
Louisiana									
Kisatchie	3,397	0	1,403	444	**5,244**	2,589	580	0	**3,169**
Maine									
White Mountain	0	0	193	5	**198**	746	0	0	**746**
Michigan									
Hiawatha	2,465	0	327	169	**2,961**	1,001	64	0	**1,065**
Huron-Manistee	2,302	0	3,211	5,260	**10,773**	1,412	438	0	**1,850**
Ottawa	666	0	2,278	653	**3,597**	291	101	0	**392**
Subtotal	5,433	0	5,816	6,082	**17,331**	2,704	603	0	**3,307**
Minnesota									
Chippewa	1,425	0	4,762	0	**6,187**	2,853	169	0	**3,022**
Superior	3,063	0	442	1,137	**4,642**	3,998	426	0	**4,424**
Subtotal	4,488	0	5,204	1,137	**10,829**	6,851	595	0	**7,446**

See footnotes at end of table.

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	**Total refor.** 2/	Release	Pre-commercial thinning	Fertili-zation	**Total TSI** 2/
Mississippi									
Mississippi	5,828	0	2,334	0	**8,162**	5,420	783	1,040	**7,243**
Missouri									
Mark Twain	694	0	4,046	4	**4,744**	4,035	2,000	0	**6,035**
Montana									
Beaverhead	490	0	15	0	**505**	517	1,036	0	**1,553**
Bitterroot	1,986	0	0	57	**2,043**	102	2,321	0	**2,423**
Custer	0	0	0	0	**0**	61	12	0	**73**
Deerlodge	0	0	78	52	**130**	75	582	0	**657**
Flathead	1,959	725	591	398	**3,673**	376	2,215	0	**2,591**
Gallatin	367	0	118	199	**684**	88	1,076	0	**1,164**
Helena	114	5	0	0	**119**	0	277	0	**277**
Idaho Panhandle	0	0	0	15	**15**	58	342	0	**400**
Kootenai	4,588	0	2,370	1,221	**8,179**	49	4,970	0	**5,019**
Lewis and Clark	107	0	38	165	**310**	16	455	0	**471**
Lolo	1,418	116	789	859	**3,182**	60	2,108	0	**2,168**
Subtotal	11,029	846	3,999	2,966	**18,840**	1,402	15,394	0	**16,796**
Nebraska									
Nebraska	0	0	0	0	**0**	0	234	0	**234**
Nevada									
Humboldt	0	0	0	0	**0**	25	0	0	**25**
New Hampshire									
White Mountain	0	0	193	0	**193**	14	0	0	**14**
New Mexico									
Carson	1,795	0	0	313	**2,108**	422	10,431	0	**10,853**
Cibola	0	0	0	0	**0**	0	6,208	0	**6,208**
Gila and Apache	621	0	0	773	**1,394**	167	6,327	0	**6,494**
Lincoln	0	0	0	0	**0**	310	548	0	**858**
Santa Fe	284	0	0	0	**284**	0	16,286	0	**16,286**
Subtotal	2,700	0	0	1,086	**3,786**	899	39,800	0	**40,699**
North Carolina									
North Carolina	2,468	0	682	0	**3,150**	1,988	333	0	**2,321**

See footnotes at end of table.

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	**Total refor.** 2/	Release	Pre-commercial thinning	Fertili-zation	**Total TSI** 2/
Ohio									
Wayne	229	0	0	0	**229**	159	12	0	**171**
Oklahoma									
Ouachita	296	271	264	0	**831**	2,420	41	0	**2,461**
Oregon									
Deschutes	9,030	0	0	0	**9,030**	1,870	6,881	0	**8,751**
Fremont	3,008	0	0	0	**3,008**	1,783	1,535	0	**3,318**
Malheur	501	0	0	104	**605**	188	3,373	0	**3,561**
Mt. Hood	6,017	0	2,759	436	**9,212**	160	4,427	0	**4,587**
Ochoco	461	0	0	0	**461**	297	2,204	0	**2,501**
Rogue River	3,103	0	0	0	**3,103**	239	65	0	**304**
Siskiyou	5,306	0	29	864	**6,199**	8,143	1,741	0	**9,884**
Siuslaw	11,784	0	0	0	**11,784**	1,918	2,787	0	**4,705**
Umatilla	4,402	0	800	54	**5,256**	314	1,650	0	**1,964**
Umpqua	5,772	0	0	0	**5,772**	3,552	4,361	590	**8,503**
Wallowa-Whitman	1,452	0	577	632	**2,661**	30	3,941	500	**4,471**
Willamette	21,986	601	88	266	**22,941**	4,448	8,967	2,381	**15,796**
Winema	5,598	0	0	0	**5,598**	0	3,527	0	**3,527**
Subtotal	78,420	601	4,253	2,356	**85,630**	22,942	45,459	3,471	**71,872**
Pennsylvania									
Allegheny	0	0	889	205	**1,094**	17	2,307	0	**2,324**
Puerto Rico									
Caribbean	171	0	0	0	**171**	1,521	0	0	**1,521**
South Carolina									
South Carolina	2,243	0	56	20	**2,319**	1,304	718	1,718	**3,740**
South Dakota									
Black Hills	0	0	0	0	**0**	0	11,047	0	**11,047**
Tennessee									
Cherokee	2,849	0	655	112	**3,616**	4,187	545	0	**4,732**
Texas									
Texas	858	0	526	0	**1,384**	518	3,071	598	**4,187**

See footnotes at end of table.

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	Total refor. 2/	Release	Pre-commercial thinning	Fertili-zation	Total TSI 2/
Utah									
Ashley	0	0	222	430	**652**	18	592	0	**610**
Dixie	277	0	115	0	**392**	424	56,790	0	**57,214**
Fishlake	0	0	132	0	**132**	25	100	0	**125**
Manti-LaSal	0	0	0	118	**118**	147	1,250	0	**1,397**
Wasatch	118	0	192	500	**810**	0	2,713	0	**2,713**
Subtotal	395	0	661	1,048	**2,104**	614	61,445	0	**62,059**
Vermont									
Green Mountain	0	0	245	0	**245**	409	325	0	**734**
Virginia									
George Washington	448	0	804	0	**1,252**	728	212	0	**940**
Jefferson	592	0	1,793	0	**2,385**	1,252	1,386	0	**2,638**
Subtotal	1,040	0	2,597	0	**3,637**	1,980	1,598	0	**3,578**
Washington									
Colville	1,711	0	0	45	**1,756**	313	1,733	0	**2,046**
Gifford Pinchot	10,370	0	0	117	**10,487**	1,094	10,364	3,643	**15,101**
Idaho Panhandle	0	0	0	0	**0**	0	120	0	**120**
Mt. Baker-Snoqualmie	2,565	0	45	296	**2,906**	162	1,730	0	**1,892**
Okanogan	450	0	74	17	**541**	471	1,173	0	**1,644**
Olympic	5,895	0	0	227	**6,122**	29	5,798	3,942	**9,769**
Umatilla	713	0	19	32	**764**	0	56	0	**56**
Wenatchee	5,785	324	326	102	**6,537**	1,556	1,135	0	**2,691**
Subtotal	27,489	324	464	836	**29,113**	3,625	22,109	7,585	**33,319**
West Virginia									
George Washington	62	0	114	0	**176**	113	0	0	**113**
Monongahela	0	0	411	2	**413**	0	0	0	**0**
Subtotal	62	0	525	2	**589**	113	0	0	**113**

See footnotes at end of table.

Table 33.—Certification of reforestation and timber stand improvement acreages by State and National Forest—fiscal year 1983—Continued

State, Commonwealth, or Territory 1/ National Forest	Planted	Seeded	Natural regen. w/ site prep. 2/	Natural regen. w/o site prep. 2/	**Total refor.** 2/	Release	Pre-commercial thinning	Fertili-zation	**Total TSI** 2/
Wisconsin									
Chequamegon	314	0	2,762	68	**3,144**	1,535	274	0	**1,809**
Nicolet	533	0	1,065	54	**1,652**	1,296	0	0	**1,296**
Subtotal	847	0	3,827	122	**4,796**	2,831	274	0	**3,105**
Wyoming									
Bighorn	544	0	99	0	**643**	100	1,404	0	**1,504**
Black Hills	0	0	0	0	**0**	0	2,042	0	**2,042**
Bridger-Teton	290	0	0	0	**290**	0	1,177	0	**1,177**
Medicine Bow	757	27	760	488	**2,032**	1,854	387	0	**2,241**
Shoshone	0	0	0	1,668	**1,668**	140	30	0	**170**
Targhee	27	0	61	0	**88**	0	37	0	**37**
Wasatch	0	0	0	0	**0**	0	526	0	**526**
Subtotal	1,618	27	920	2,156	**4,721**	2,094	5,603	0	**7,697**
Total	193,297	8,995	47,253	33,809	**283,354**	117,473	294,867	17,368	**429,708**

1/ States not listed had no certification in fiscal year 1983.
2/ Regen. = regeneration, w/ site prep. = with site preparation, w/o site prep. = without site preparation, refor. = reforestation, TSI = timber stand improvement.

Table 34.—Certification of reforestation and timber stand improvement acreages by Region—fiscal year 1983

Region	Reforestation					Timber stand improvement			
			Natural regeneration						
	Plant	Seed	With site preparation	Without site preparation	Total	Release	Precommercial thinning	Fertilization	Total
Northern	14,659	846	4,616	3,682	**23,803**	3,972	24,574	0	**28,546**
Rocky Mountain	5,296	1,477	1,026	3,151	**10,950**	3,657	28,404	0	**32,061**
Southwest	3,617	0	139	1,086	**4,842**	3,499	73,743	0	**77,242**
Intermountain	2,934	0	886	1,565	**5,385**	3,860	70,812	0	**74,672**
Pacific Southwest	6,993	0	85	0	**7,078**	3,349	5,182	0	**8,531**
Pacific Northwest	105,909	925	4,717	3,242	**114,793**	26,567	67,448	11,056	**105,071**
Southern	40,739	5,747	14,477	576	**61,539**	53,450	14,220	6,312	**73,982**
Eastern	13,013	0	21,251	7,507	**41,771**	18,102	6,490	0	**24,592**
Alaska	137	0	56	13,000	**13,193**	1,015	3,994	0	**5,009**
Total	193,297	8,995	47,253	33,809	**283,354**	117,471	294,867	17,368	**429,706**

Table 35.—Developed recreation use on National Forest System lands by State—fiscal years 1979–83

State, 1/ Commonwealth, or Territory	1983	1982	1981	1980	1979
			1,000 RVD's 2/		
Alabama	306.2	291.9	290.7	298.1	271.7
Alaska	520.2	589.4	631.0	557.6	885.7
Arizona	5,031.1	5,725.2	6,235.9	5,900.6	5,355.7
Arkansas	526.7	784.4	660.8	679.6	757.2
California	22,419.1	23,129.9	22,319.4	23,431.2	22,379.2
Colorado	8,619.7	9,341.5	9,638.4	9,904.1	9,606.4
Florida	1,579.1	1,490.1	1,514.7	1,578.5	1,422.2
Georgia	370.6	405.7	387.6	415.3	363.4
Idaho	3,301.1	3,423.7	3,642.5	3,663.7	3,526.2
Illinois	217.4	222.5	200.3	207.0	207.8
Indiana	214.2	217.2	189.9	203.4	198.5
Kansas	2.8	6.0	6.0	5.4	6.0
Kentucky	671.6	618.2	740.8	813.5	631.7
Louisiana	161.0	163.2	219.1	183.5	211.6
Maine	24.3	27.9	17.1	10.8	49.2
Michigan	1,239.8	1,522.2	1,486.6	1,457.2	1,330.2
Minnesota	1,013.1	1,007.2	1,046.5	1,173.5	1,151.2
Mississippi	250.7	240.4	248.8	258.8	285.6
Missouri	433.8	440.0	438.3	425.8	345.2
Montana	2,690.4	2,818.9	2,883.6	2,616.1	2,502.0
Nebraska	43.9	49.1	49.6	48.6	45.6
Nevada	1,040.9	1,048.6	1,057.1	1,020.2	974.4
New Hampshire	999.4	936.8	1,000.3	878.6	891.8
New Mexico	2,979.0	2,598.0	2,510.6	2,481.6	2,206.4
New York	8.9	8.5	9.1	9.4	9.0
North Carolina	1,026.7	1,281.5	1,397.1	1,475.7	1,237.8
North Dakota	16.7	17.2	16.1	14.0	12.9
Ohio	49.6	53.7	55.5	57.9	54.1
Oklahoma	107.1	100.0	81.5	75.6	77.4
Oregon	7,505.8	7,730.1	8,312.1	8,456.2	8,000.6
Pennsylvania	688.9	570.6	635.4	610.6	620.2
Puerto Rico	229.5	218.5	241.6	416.2	396.2
South Carolina	250.8	272.7	285.4	246.6	224.3
South Dakota	528.7	548.1	608.8	605.4	593.9
Tennessee	1,040.9	1,016.1	1,076.4	1,166.2	861.0
Texas	394.0	395.9	403.0	310.4	341.3
Utah	4,643.7	5,165.2	5,163.4	5,045.1	4,640.2
Vermont	468.9	603.0	446.0	401.1	409.0
Virginia	877.7	702.7	714.3	687.5	632.9
Washington	5,634.0	5,437.7	4,837.1	4,811.1	5,238.0
West Virginia	424.0	415.2	399.9	402.2	360.9
Wisconsin	500.8	552.6	566.6	565.2	491.7
Wyoming	1,934.8	2,140.9	2,216.9	2,042.4	2,055.0
Total	80,987.6	84,328.2	84,881.8	85,611.5	81,861.3

1/ States not listed have no Forest Service recreation program.
2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Table 36.—Dispersed recreation use on National Forest System lands by State—fiscal years 1979-83

State, Commonwealth, 1/ or Territory	1983	1982	1981	1980	1979
			1,000 RVD's 2/		
Alabama	741.8	980.1	905.3	954.0	882.2
Alaska	3,623.8	2,982.0	2,588.7	2,350.6	2,350.3
Arizona	11,525.9	11,187.4	11,594.6	11,844.3	8,483.4
Arkansas	1,766.2	1,758.6	1,756.7	1,829.4	2,025.4
California	30,718.0	32,113.9	32,570.3	34,101.9	31,947.1
Colorado	11,418.2	13,020.2	13,430.0	12,544.6	12,433.0
Florida	1,474.9	1,486.8	1,513.6	1,695.4	1,806.9
Georgia	1,900.9	1,777.1	1,723.2	1,781.1	1,535.8
Idaho	6,815.9	7,187.1	7,617.4	7,133.6	7,014.3
Illinois	581.6	613.6	623.6	632.3	621.2
Indiana	551.9	575.4	584.9	578.0	541.1
Kansas	12.0	24.9	24.9	22.5	24.9
Kentucky	1,395.2	1,755.6	2,091.4	2,065.3	1,930.0
Louisiana	336.1	316.0	335.8	340.2	331.9
Maine	27.2	23.6	28.7	30.1	36.3
Michigan	4,158.6	4,130.1	4,160.1	4,029.6	3,685.5
Minnesota	3,374.1	3,485.5	3,570.8	3,425.9	2,999.1
Mississippi	1,115.1	1,039.2	1,012.5	944.5	942.2
Missouri	1,530.6	1,519.7	1,443.1	1,368.5	1,111.4
Montana	6,690.2	6,730.9	6,657.5	5,961.1	5,827.6
Nebraska	86.9	97.0	92.8	115.7	105.7
Nevada	1,551.8	1,237.3	1,345.5	1,344.1	1,103.5
New Hampshire	1,334.0	1,276.0	1,672.2	1,873.9	1,489.1
New Mexico	3,891.0	3,956.0	3,640.5	3,361.5	3,304.7
New York	14.1	14.1	15.4	14.2	11.7
North Carolina	3,061.9	3,586.9	3,846.4	3,777.1	3,252.8
North Dakota	117.0	116.7	117.3	112.8	107.7
Ohio	349.1	432.9	394.6	335.3	307.7
Oklahoma	297.7	305.6	316.9	313.5	315.4
Oregon	10,739.7	10,308.5	9,986.0	10,071.2	10,016.2
Pennsylvania	1,593.5	1,519.7	1,571.1	1,535.0	1,431.7
Puerto Rico	315.0	305.4	310.7	269.9	299.4
South Carolina	821.5	882.7	902.8	864.3	761.9
South Dakota	1,742.4	1,727.1	1,721.0	1,599.5	1,617.2
Tennessee	1,810.1	1,427.6	1,343.6	1,404.3	1,168.6
Texas	1,474.4	1,471.4	1,516.5	1,427.0	1,500.5
Utah	8,686.7	9,625.5	9,254.1	9,015.9	7,860.9
Vermont	137.3	140.6	154.3	143.9	149.8
Virginia	3,115.9	2,926.9	2,839.0	2,640.5	2,659.6
Washington	8,880.5	9,116.9	9,018.3	8,080.5	8,338.5
West Virginia	1,009.2	1,036.6	945.8	998.3	920.0
Wisconsin	1,338.1	1,034.5	1,617.4	1,508.5	1,390.1
Wyoming	4,594.2	3,855.7	3,972.1	3,498.0	3,662.0
Total	146,720.2	149,109.3	150,827.4	147,937.8	138,304.3

1/ States not listed have no Forest Service recreation program.
2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Table 37.—Total recreation use on National Forest System lands by State—fiscal years 1979-83

State, Commonwealth, 1/ or Territory	1983	1982	1981	1980	1979
			1,000 RVD's 2/		
Alabama	1,048.0	1,272.0	1,196.0	1,252.1	1,153.9
Alaska	4,144.0	3,571.4	3,219.7	2,908.2	3,236.0
Arizona	16,557.0	16,912.6	17,830.5	17,744.9	13,839.1
Arkansas	2,292.9	2,543.0	2,417.5	2,509.0	2,783.6
California	53,137.1	55,243.8	54,889.7	57,533.1	54,326.3
Colorado	20,037.9	22,361.7	23,068.4	22,448.7	22,039.4
Florida	3,054.0	2,976.9	3,028.3	3,273.9	3,229.1
Georgia	2,271.5	2,182.8	2,110.8	2,196.4	1,899.2
Idaho	10,117.0	10,610.8	11,259.9	10,797.3	10,540.5
Illinois	799.0	836.1	823.9	839.3	829.0
Indiana	766.1	792.6	774.8	781.4	739.6
Kansas	14.8	30.9	30.9	27.9	30.9
Kentucky	2,066.8	2,373.8	2,832.2	2,878.8	2,561.7
Louisiana	497.1	479.2	554.9	523.7	543.5
Maine	51.5	51.5	45.8	40.9	85.5
Michigan	5,398.4	5,652.3	5,646.7	5,486.8	5,015.7
Minnesota	4,387.2	4,492.7	4,617.3	4,599.4	4,150.3
Mississippi	1,365.8	1,279.6	1,261.3	1,203.3	1,227.8
Missouri	1,964.4	1,959.7	1,881.4	1,794.3	1,456.6
Montana	9,380.6	9,549.8	9,541.1	8,577.2	8,329.6
Nebraska	130.8	146.1	142.4	164.3	151.3
Nevada	2,592.7	2,285.9	2,402.6	2,364.3	2,077.9
New Hampshire	2,333.4	2,212.8	2,672.5	2,752.5	2,380.9
New Mexico	6,870.0	6,554.0	6,151.1	5,843.1	5,511.1
New York	23.0	22.6	24.5	23.6	20.7
North Carolina	4,088.6	4,868.4	5,243.5	5,252.8	4,490.6
North Dakota	133.7	133.9	133.4	126.8	120.6
Ohio	398.7	486.6	450.1	393.2	361.8
Oklahoma	404.8	405.6	398.4	389.1	392.8
Oregon	18,245.5	18,038.6	18,298.1	18,527.4	18,016.8
Pennsylvania	2,282.4	2,090.3	2,206.5	2,145.6	2,051.9
Puerto Rico	544.5	523.9	552.3	686.1	695.6
South Carolina	1,072.3	1,155.4	1,188.2	1,110.9	986.2
South Dakota	2,271.1	2,275.2	2,329.8	2,204.9	2,211.1
Tennessee	2,851.0	2,443.7	2,420.0	2,570.5	2,029.6
Texas	1,868.4	1,867.3	1,919.5	1,737.4	1,841.8
Utah	13,330.4	14,790.7	14,417.5	14,061.0	12,501.1
Vermont	606.2	743.6	600.3	545.0	558.8
Virginia	3,993.6	3,629.6	3,553.3	3,328.0	3,292.5
Washington	14,514.5	14,554.6	13,855.4	12,891.6	13,576.5
West Virginia	1,433.2	1,451.8	1,345.7	1,400.5	1,280.9
Wisconsin	1,838.9	1,587.1	2,184.0	2,073.7	1,881.8
Wyoming	6,529.0	5,996.6	6,189.0	5,540.4	5,717.0
Total	227,707.8	233,437.5	235,709.2	233,549.3	220,166.6

1/ States not listed have no Forest Service recreation program.
2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Table 38.—State summary of developed recreation use on National Forest System lands by activity—fiscal year 1983

State, 1/ Territory, or Commonwealth	Interpretive, observation, & documentary sites	Trail heads	Swimming, boating, & fishing sites	Camp-grounds	Picnic & sports sites 2/	Hotels, lodges, resorts, & concessions	Recreation residences	Winter sports	Total developed use
					1,000 RVD's 3/				
Alabama	8.4	0	96.5	179.7	21.6	0	0	0	306.2
Alaska	62.4	5.7	9.2	156.3	64.4	136.7	14.0	71.5	520.2
Arizona	164.4	18.4	654.0	2,314.3	1,044.5	426.7	291.2	117.6	5,031.1
Arkansas	36.1	0	124.0	294.6	58.1	6.3	7.6	0	526.7
California	394.8	263.0	820.2	9,373.7	3,703.8	1,507.7	2,993.3	3,362.6	22,419.1
Colorado	338.2	168.6	165.4	2,661.8	494.2	361.0	271.5	4,159.0	8,619.7
Florida	16.8	0	193.9	1,002.9	237.1	0	128.4	0	1,579.1
Georgia	50.8	0	32.3	192.7	83.1	0	11.7	0	370.6
Idaho	85.4	29.6	239.3	1,626.2	387.7	168.9	258.1	505.9	3,301.1
Illinois	38.0	0	41.0	79.3	59.1	0	0	0	217.4
Indiana	4.6	12.1	52.4	125.5	19.6	0	0	0	214.2
Kansas	0	0	0	0	2.8	0	0	0	2.8
Kentucky	58.1	.2	51.4	331.2	182.8	36.7	11.2	0	671.6
Louisiana	6.9	0	31.5	69.1	30.2	0	23.3	0	161.0
Maine	1.6	0	0	14.0	3.3	0	0	5.4	24.3
Michigan	44.7	.3	260.5	653.1	112.0	1.0	75.6	92.6	1,239.8
Minnesota	7.6	1.1	208.0	324.3	78.1	142.9	199.5	51.6	1,013.1
Mississippi	4.7	0	102.4	111.1	32.5	0	0	0	250.7
Missouri	6.5	.3	66.1	227.4	133.5	0	0	0	433.8
Montana	108.7	35.1	272.3	1,092.1	280.8	126.4	221.4	553.6	2,690.4
Nebraska	.4	2.0	1.1	12.7	27.7	0	0	0	43.9
Nevada	17.1	5.5	53.6	500.2	199.9	85.3	25.1	154.2	1,040.9
New Hampshire	68.0	2.4	27.6	460.4	30.4	94.4	0	316.2	999.4
New Mexico	227.4	20.3	52.3	1,147.1	374.9	96.2	83.4	977.4	2,979.0
New York	0	1.3	0	7.2	.4	0	0	0	8.9
North Carolina	100.1	5.0	157.6	592.5	150.9	13.4	7.2	0	1,026.7
North Dakota	.3	0	0	14.1	2.3	0	0	0	16.7
Ohio	.8	0	10.5	19.4	18.9	0	0	0	49.6
Oklahoma	17.5	0	24.5	27.1	38.0	0	0	0	107.1
Oregon	460.0	291.2	389.2	3,814.8	551.5	819.4	376.0	803.7	7,505.8
Pennsylvania	55.1	0	75.2	468.1	39.8	0	50.7	0	688.9
Puerto Rico	77.1	0	0	0	129.7	19.2	3.5	0	229.5
South Carolina	2.2	0	28.8	164.4	55.4	0	0	0	250.8
South Dakota	9.1	8.2	45.3	207.1	87.6	34.1	91.7	45.6	528.7
Tennessee	13.5	4.0	110.7	598.9	232.8	31.9	49.1	0	1,040.9

See footnotes at end of table.

Table 38.—State summary of developed recreation use on National Forest System lands by activity—fiscal year 1983—Continued

State, 1/ Territory, or Commonwealth	Interpretive, observation, & documentary sites	Trail heads	Swimming, boating, & fishing sites	Camp-grounds	Picnic & sports sites 2/	Hotels, lodges, resorts, & concessions	Recreation residences	Winter sports	Total developed use
					1,000 RVD's 3/				
Texas	4.6	0	68.7	235.6	53.2	31.9	0	0	**394.0**
Utah	136.6	28.0	207.3	2,218.7	375.0	607.2	248.6	822.3	**4,643.7**
Vermont	4.3	.4	5.9	37.5	17.0	8.9	0	394.9	**468.9**
Virginia	50.8	2.7	106.3	493.7	222.8	1.4	0	0	**877.7**
Washington	384.2	49.0	78.7	2,298.3	645.7	653.7	474.5	1,049.9	**5,634.0**
West Virginia	17.5	0	26.1	284.2	94.5	1.7	0	0	**424.0**
Wisconsin	2.9	.2	76.1	371.7	25.6	4.4	15.6	4.3	**500.8**
Wyoming	63.8	49.1	70.3	866.5	192.6	273.3	178.1	241.1	**1,934.8**
Total	3,152.0	1,003.7	5,036.2	35,669.5	10,595.8	5,690.7	6,110.3	13,729.4	**80,987.6**

1/ States not listed have no Forest Service recreation program.
2/ Includes organization camp sites.
3/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Table 39.—State summary of dispersed recreation use on National Forest System lands—fiscal year 1983

State, 1/ Territory, or Commonwealth	Roads	Trails	Lakes and ponds	Reservoirs	Rivers and streams	General undeveloped area	Total dispersed use
				1,000 RVD's 2/			
Alabama	226.2	48.4	4.4	87.9	59.2	315.7	**741.8**
Alaska	538.5	211.7	101.0	.3	154.6	2,617.7	**3,623.8**
Arizona	6,099.0	554.8	46.5	752.6	626.8	3,446.2	**11,525.9**
Arkansas	399.4	44.8	0	384.3	147.4	790.3	**1,766.2**
California	13,231.4	2,262.0	597.6	3,140.7	2,201.0	9,285.3	**30,718.0**
Colorado	3,912.9	1,841.1	338.6	580.9	529.6	4,215.1	**11,418.2**
Florida	334.4	12.2	261.4	13.9	178.7	674.3	**1,474.9**
Georgia	544.5	152.2	0	175.2	224.7	804.3	**1,900.9**
Idaho	2,034.8	656.3	289.5	272.2	705.3	2,857.8	**6,815.9**
Illinois	78.0	91.2	1.3	71.4	6.4	333.3	**581.6**
Indiana	123.6	42.3	0	193.2	20.3	172.5	**551.9**
Kansas	8.2	0	0	.7	0	3.1	**12.0**
Kentucky	420.7	129.0	0	394.9	150.7	299.9	**1,395.2**
Louisiana	81.0	11.7	0	43.6	28.3	171.5	**336.1**
Maine	3.7	9.8	1.1	.9	1.5	10.2	**27.2**
Michigan	1,754.1	243.6	363.7	25.4	324.2	1,447.6	**4,158.6**
Minnesota	540.3	113.0	1,147.9	4.3	170.6	1,398.0	**3,374.1**
Mississippi	320.7	20.7	7.3	50.2	86.5	629.7	**1,115.1**
Missouri	514.2	57.5	.4	48.5	203.8	706.2	**1,530.6**
Montana	2,206.3	895.8	259.9	187.9	362.9	2,777.4	**6,690.2**
Nebraska	25.3	3.6	0	5.9	.6	51.5	**86.9**
Nevada	533.9	154.8	11.3	6.2	150.8	694.8	**1,551.8**
New Hampshire	427.9	579.5	3.6	1.6	26.7	294.7	**1,334.0**
New Mexico	1,058.7	389.0	33.5	69.6	344.1	1,996.1	**3,891.0**
New York	.5	4.2	0	1.3	0	8.1	**14.1**
North Carolina	1,085.0	406.8	13.3	198.0	241.2	1,117.6	**3,061.9**
North Dakota	28.1	0	0	3.9	4.5	80.5	**117.0**
Ohio	86.0	35.1	0	18.7	21.5	187.8	**349.1**
Oklahoma	167.0	9.9	0	27.8	10.0	83.0	**297.7**
Oregon	3,870.9	964.1	499.7	440.9	812.9	4,151.2	**10,739.7**
Pennsylvania	429.7	74.8	0	167.0	115.8	806.2	**1,593.5**
Puerto Rico	103.6	21.3	0	0	68.7	121.4	**315.0**
South Carolina	296.5	28.0	.3	42.6	98.1	356.0	**821.5**
South Dakota	1,306.3	59.5	0	87.1	40.4	249.1	**1,742.4**
Tennessee	487.8	397.6	0	102.4	350.4	471.9	**1,810.1**
Texas	139.8	25.6	.3	919.8	28.0	360.9	**1,474.4**
Utah	2,773.4	712.7	199.8	863.0	439.8	3,698.0	**8,686.7**
Vermont	56.1	23.8	3.0	.5	4.8	49.1	**137.3**
Virginia	1,001.3	238.7	0	178.1	248.9	1,448.9	**3,115.9**
Washington	3,125.9	934.2	401.8	100.0	516.1	3,802.5	**8,880.5**
West Virginia	298.2	62.2	1.0	51.0	135.2	461.6	**1,009.2**
Wisconsin	464.7	71.1	404.3	22.5	44.0	331.5	**1,338.1**
Wyoming	1,536.8	391.7	126.2	107.0	332.1	2,100.4	**4,594.2**
Total	52,675.3	12,986.3	5,118.7	9,843.9	10,217.1	55,878.9	**146,720.2**

1/ States not listed have no Forest Service recreation program.
2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

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Table 40.--State summary of total recreation use on National Forest System lands by activity --fiscal year 1983

State, 1/ Territory, or Commonwealth	Camping	Picnicking	Travel (mechanized)	Water sports	Winter sports	Fishing	Hunting	Hiking & mountain climbing
				1,000 RVD's 2/				
Alabama	199.7	61.7	206.1	157.7	0	62.5	215.8	60.3
Alaska	288.9	63.1	340.2	1,549.7	115.3	361.9	158.0	198.7
Arizona	3,658.2	870.2	6,152.5	1,196.0	314.2	551.6	656.5	596.8
Arkansas	433.2	116.5	386.9	306.5	0	310.7	467.0	95.5
California	13,220.4	1,594.8	13,356.9	3,987.6	3,776.0	2,768.5	1,131.9	2,507.2
Colorado	4,486.6	414.6	4,126.6	210.4	3,994.9	1,369.7	1,051.4	1,522.1
Florida	1,221.3	201.8	295.0	414.7	0	180.0	324.6	49.1
Georgia	519.9	65.8	501.9	185.1	3.5	231.3	332.4	190.6
Idaho	2,733.9	372.2	2,091.2	587.0	585.5	829.7	745.7	394.0
Illinois	109.3	48.4	140.9	79.0	.1	45.2	123.0	69.3
Indiana	175.7	25.0	97.8	140.9	0	118.9	91.4	45.3
Kansas	1.2	2.5	8.0	0	.1	.5	1.2	.4
Kentucky	355.0	101.6	361.1	422.5	.5	196.3	151.0	183.6
Louisiana	102.4	38.4	71.4	35.2	0	45.9	101.2	19.6
Maine	10.0	1.8	2.8	2.5	1.8	2.6	7.4	10.5
Michigan	1,096.3	108.9	1,879.9	408.3	133.6	492.7	664.0	148.9
Minnesota	1,294.2	52.4	572.3	789.1	102.6	671.1	318.7	71.9
Mississippi	224.3	70.5	306.1	125.0	0	68.8	453.3	52.0
Missouri	390.8	101.9	472.0	271.6	0	71.8	368.7	81.1
Montana	1,826.0	298.0	2,162.7	312.7	615.4	629.8	946.0	657.3
Nebraska	22.5	20.3	16.8	2.9	.1	5.8	17.4	7.4
Nevada	646.2	188.0	349.5	104.9	214.9	160.3	170.8	148.2
New Hampshire	563.9	57.5	467.1	48.8	323.0	21.5	34.9	479.1
New Mexico	1,531.0	493.1	1,133.8	153.3	971.3	337.5	507.5	467.8
New York	8.4	1.8	.8	0	.5	1.2	5.3	1.5
North Carolina	851.6	180.2	1,029.2	306.3	12.5	229.8	536.1	495.3
North Dakota	13.7	9.4	20.0	2.6	1.4	3.9	60.5	2.4
Ohio	35.1	26.2	89.9	22.9	.3	23.4	118.1	33.9
Oklahoma	56.4	27.0	145.1	26.4	0	19.5	56.8	17.9
Oregon	5,088.2	694.4	3,697.8	1,007.8	942.1	1,128.5	1,321.4	839.1
Pennsylvania	614.3	36.0	371.6	147.3	3.7	265.4	502.0	89.9
Puerto Rico	12.5	190.9	38.2	70.8	0	0	0	101.9
South Carolina	197.0	54.4	282.0	81.0	0	71.8	220.9	44.4
South Dakota	198.6	60.6	1,310.3	73.9	53.4	74.4	139.1	70.8
Tennessee	720.8	229.2	558.9	330.1	.5	208.6	237.4	218.2
Texas	399.1	51.6	143.6	155.7	0	816.0	178.5	29.1
Utah	3,933.2	545.9	2,652.2	468.5	902.1	1,107.9	772.4	716.1
Vermont	43.2	7.7	61.0	6.9	347.9	4.3	31.2	18.9
Virginia	775.8	226.0	851.5	170.5	4.7	333.1	679.5	258.5
Washington	3,605.6	482.0	2,686.7	328.5	1,035.4	739.6	1,058.3	941.6
West Virginia	473.8	57.1	266.0	34.7	1.5	171.8	240.6	74.7
Wisconsin	437.2	27.1	503.3	143.2	19.2	378.4	202.8	29.4
Wyoming	1,527.7	153.8	1,427.0	149.2	268.7	455.0	728.4	457.1
Total	54,103.1	8,430.3	51,634.6	15,017.7	14,746.7	15,567.2	16,129.1	12,497.4

1/ States not listed have no Forest Service recreation program.
2/ One recreation visitor-day (RVD) is the recreation use of National Forest land or water that aggregates 12 visitor-hours. This may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Horseback riding	Recreation cabin use	Nature study	Sightseeing	Visitor information service users	Other developed site use	Total use	State, Territory, or Commonwealth 1/
				1,000 RVD's 2/			
8.3	0	36.5	15.3	21.2	2.9	1,048.0	Alabama
3.0	119.2	139.5	682.3	88.7	35.5	4,144.0	Alaska
218.7	293.5	525.6	474.3	234.5	814.4	16,557.0	Arizona
33.7	7.6	54.5	23.5	29.6	27.7	2,292.9	Arkansas
537.6	3,021.2	1,139.5	1,683.3	666.9	3,745.3	53,137.1	California
428.9	271.8	469.8	932.1	184.5	574.5	20,037.9	Colorado
30.0	128.4	50.0	33.4	38.0	87.7	3,054.0	Florida
27.5	11.7	30.3	113.6	30.6	27.3	2,271.5	Georgia
220.9	258.4	599.4	287.0	114.4	297.7	10,117.0	Idaho
46.6	0	39.5	78.9	13.0	5.8	799.0	Illinois
45.9	0	18.0	1.9	5.3	0	766.1	Indiana
.2	0	.6	0	0	.1	14.8	Kansas
29.8	11.2	49.0	148.4	30.2	26.6	2,066.8	Kentucky
11.0	23.3	18.7	3.4	9.3	17.3	497.1	Louisiana
.5	0	2.9	1.3	1.4	6.0	51.5	Maine
34.0	75.6	201.8	101.7	32.2	20.5	5,398.4	Michigan
7.2	199.5	110.5	18.7	37.0	142.0	4,387.2	Minnesota
16.0	0	25.7	9.4	13.6	1.1	1,365.8	Mississippi
43.6	0	77.3	45.8	20.4	19.4	1,964.4	Missouri
395.9	222.6	551.3	234.4	231.5	297.0	9,380.6	Montana
4.6	0	13.1	.3	9.4	10.2	130.8	Nebraska
99.7	23.3	103.9	55.2	214.6	113.2	2,592.7	Nevada
14.5	0	13.0	214.4	20.8	74.9	2,333.4	New Hampshire
139.4	83.5	469.3	221.5	186.5	174.5	6,870.0	New Mexico
1.7	0	1.8	0	0	0	23.0	New York
52.0	7.2	90.0	192.2	90.1	16.1	4,088.6	North Carolina
4.1	0	4.1	9.2	2.4	0	133.7	North Dakota
14.0	0	17.6	4.2	11.0	2.1	398.7	Ohio
3.7	0	7.1	35.6	9.1	.2	404.8	Oklahoma
237.8	377.2	834.4	910.7	323.0	843.1	18,245.5	Oregon
5.1	50.7	39.4	119.9	13.4	23.7	2,282.4	Pennsylvania
0	3.5	13.2	31.4	49.0	33.1	544.5	Puerto Rico
25.0	0	41.0	21.7	22.0	11.1	1,072.3	South Carolina
23.0	91.8	59.0	24.4	34.9	56.9	2,271.1	South Dakota
138.1	49.1	24.7	48.8	22.7	63.9	2,851.0	Tennessee
6.9	0	15.5	34.9	15.2	22.3	1,868.4	Texas
297.1	247.4	334.6	391.8	128.5	832.7	13,330.4	Utah
1.3	0	4.0	27.8	3.2	48.8	606.2	Vermont
72.1	0	160.9	373.5	37.3	50.2	3,993.6	Virginia
233.1	474.5	572.1	874.1	452.3	1,030.7	14,514.5	Washington
4.6	1.5	24.5	18.5	21.7	42.2	1,433.2	West Virginia
3.3	15.6	60.5	6.6	4.8	7.5	1,838.9	Wisconsin
222.2	178.1	185.2	353.3	60.0	363.3	6,529.0	Wyoming
3,742.6	6,247.4	7,229.3	8,858.7	3,534.2	9,969.5	227,707.8	Total

Table 41.—Status of the National Forest units of the National Wilderness Preservation System—calendar years 1979–83

State or Commonwealth 1/	1983	1982	1981	1980	1979
			1,000 acres		
Alabama	20	13	13	13	13
Alaska	5,453	5,453	5,453	5,453	0
Arizona	557	557	557	557	557
Arkansas	25	25	25	25	25
California	2,139	2,139	2,139	2,139	2,131
Colorado	2,561	2,561	2,561	2,561	1,192
Florida	23	23	23	23	23
Georgia	32	32	32	32	32
Idaho	3,825	3,825	3,825	3,825	1,490
Indiana	13	0	0	0	0
Kentucky	5	5	5	5	5
Louisiana	9	9	9	9	0
Minnesota	793	793	793	793	793
Missouri	47	40	40	40	12
Montana	3,107	3,107	3,107	3,107	3,088
Nevada	65	65	65	65	65
New Hampshire	26	26	26	26	26
New Mexico	1,402	1,402	1,402	1,402	794
North Carolina	31	31	31	31	31
Oregon	1,214	1,214	1,214	1,214	1,212
South Carolina	17	17	17	17	3
South Dakota	10	10	10	10	0
Tennessee	8	8	8	8	8
Utah	30	30	30	30	30
Vermont	17	17	17	17	17
Virginia	9	9	9	9	9
Washington	1,501	1,501	1,501	1,501	1,501
West Virginia	77	30	30	30	30
Wisconsin	20	20	20	20	20
Wyoming	2,193	2,193	2,193	2,193	2,193
Total	25,229	25,155	25,155	25,155	15,300

1/ States not listed have no National Forest System acres in the National Wilderness Preservation System.

Table 42.—Additions to the National Wilderness Preservation System—fiscal year 1983

Public Law	State	Date	Number of new areas	Number of additions	Number of adjustments	Acres
97-411	Alabama	1/3/83	1	0	0	6,780
97-384	Indiana	12/22/82	1	0	0	12,953
97-407	Missouri	1/3/83	1	0	0	6,888
97-466	West Virginia	1/13/83	3	0	0	47,800
Total			6	0	0	74,421

Table 43.—Additions to the National Wild and Scenic Rivers System—fiscal year 1983

River	State	Date	Miles
	There were no additions to the National Wild and Scenic Rivers System in 1983.		
Total			

Table 44.—Wildlife and fish habitat improvement by Region—fiscal year 1983

Region	Wildlife	Resident fish	Anadromous fish	Threatened, endangered, & sensitive species	Knutson-Vandenberg	**Total** 1/
Northern						
Acres	3,144	118	0	570	1,856	**5,688**
Structures	166	208	0	133	372	**879**
Rocky Mountain						
Acres	43,065	313	0	97	4,731	**48,206**
Structures	1,766	243	0	5	978	**2,992**
Southwestern						
Acres	7,760	0	0	350	9,361	**17,471**
Structures	78	95	0	11	184	**368**
Intermountain						
Acres	8,900	48	0	3	2,769	**11,720**
Structures	587	849	413	27	1,393	**3,269**
Pacific Southwest						
Acres	2,080	1	77	10	3,595	**5,763**
Structures	147	17	28	53	2,469	**2,714**
Pacific Northwest						
Acres	1,997	26	19	1	9,429	**11,472**
Structures	205	78	123	0	2,150	**2,556**
Southern						
Acres	67,245	1,360	0	29,936	71,084	**169,625**
Structures	1,927	245	0	0	0	**2,172**
Eastern						
Acres	18,347	8,582	40	3,861	6,248	**37,078**
Structures	1,716	1,025	2	62	916	**3,721**
Alaska						
Acres	1,499	145	787	0	375	**2,806**
Structures	36	0	15	0	31	**82**
Total						
Acres	154,037	10,593	923	34,828	109,448	**309,829**
Structures	6,628	2,760	581	291	8,493	**18,753**

1/ Does not include activities that are accomplished in support of other resource programs.

Table 45.—Range allotment management status by Region—fiscal year 1983

Region	Number of allotments			Acres	
	Total	Improved management started	Improved management maintained	Total	Suitable
Northern	**1,846**	28	1,236	10,909,551	4,036,474
Rocky Mountain	**2,624**	93	1,951	18,985,216	8,588,030
Southwestern	**1,546**	88	1,031	19,473,426	13,144,122
Intermountain	**1,895**	96	1,258	26,350,225	12,640,295
Pacific Southwest	**775**	26	558	11,790,878	4,179,845
Pacific Northwest	**869**	71	471	12,319,853	6,670,038
Southern	**656**	49	461	3,709,242	2,232,824
Eastern	**206**	83	159	94,463	46,316
	10,417	534	7,125	103,632,854	51,537,944

Table 46.—Range allotment management status—fiscal years 1979-83

	1983	1982	1981	1980	1979
Total allotment	**10,417**	11,069	10,871	10,754	10,967
Improved management started (number of allotments)	**534**	705	677	1,236	897
Improved management maintained (number of allotments)	**7,125**	6,886	6,705	6,378	5,698
Total acres (million acres)	**104**	105	105	112	109
Suitable acres (million acres)	**52**	52	56	58	50
Permitted use (million AUM's 1/)	**10.1**	9.9	9.8	9.8	9.8
Actual use (million AUM's)	**8.8**	8.8	8.8	8.8	8.8

1/ An animal unit month (AUM) is the amount of grazing required by a 1,000 pound cow for 1 month.

Table 47.—Actual grazing use by State—fiscal year 1983

State or Commonwealth 1/	Cattle	Sheep	Domestic horses	Wild horses	Wild burros	Total
			AUM's 2/			
Alabama	2,442	0	42	0	0	**2,484**
Arizona	1,220,647	18,685	11,983	72	1,015	**1,252,402**
Arkansas	44,092	0	229	0	0	**44,321**
California	473,006	61,903	10,415	5,976	108	**551,408**
Colorado	813,548	147,009	17,163	0	0	**977,720**
Florida	33,668	0	0	0	0	**33,668**
Georgia	5,065	0	0	0	0	**5,065**
Idaho	598,665	202,628	22,819	43	0	**824,155**
Illinois	14,877	2,756	43	0	0	**17,676**
Indiana	650	0	0	0	0	**650**
Kansas	54,388	0	103	0	0	**54,491**
Kentucky	138	0	0	0	0	**138**
Louisiana	36,144	0	272	0	0	**36,416**
Michigan	639	0	0	0	0	**639**
Minnesota	1,637	0	0	0	0	**1,637**
Mississippi	11,099	0	0	0	0	**11,099**
Missouri	28,957	0	0	0	0	**28,957**
Montana	576,603	19,702	12,930	20	0	**609,255**
Nebraska	125,896	405	76	0	0	**126,377**
Nevada	235,572	44,060	1,260	5,484	108	**286,484**
New Mexico	764,582	33,894	16,313	1,699	180	**816,668**
New York	8,732	0	48	0	0	**8,780**
North Carolina	74	0	0	0	0	**74**
North Dakota	516,020	80	4,291	0	0	**520,391**
Ohio	396	0	0	0	0	**396**
Oklahoma	24,856	0	0	0	0	**24,856**
Oregon	466,954	37,519	5,332	2,952	0	**512,757**
South Carolina	341	0	0	0	0	**341**
South Dakota	480,054	4,627	1,699	0	0	**486,380**
Texas	74,772	0	73	0	0	**74,845**
Utah	464,731	182,264	6,628	478	0	**654,101**
Vermont	445	11	17	0	0	**473**
Virginia	6,560	182	1,001	0	0	**7,743**
Washington	108,251	12,500	6,890	0	0	**127,641**
West Virginia	9,250	386	28	0	0	**9,664**
Wisconsin	191	0	1	0	0	**192**
Wyoming	539,851	128,102	27,368	0	0	**695,321**
Total	7,743,793	896,713	147,024	16,724	1,411	**8,805,665**

1/ States not listed had no Forest Service grazing program in 1983.
2/ An animal unit month (AUM) is the amount of grazing required by a 1,000 pound cow for 1 month. The statistics are expressed in months.

Table 48.—Annual grazing statistics—fiscal year 1983

	Permittees 1/	Cattle		Horses and burros		Sheep and goats		Total	
		Number	AUM's 2/	Number	AUM's	Number	AUM's	Number	AUM's
Authorized to graze		1,552,777	8,747,968	183,829	111,924	1,590,817	1,214,186	**3,327,423**	**10,074,078**
Actually grazed									
Paid permits	14,211	1,350,138	7,715,682	22,218	75,494	1,192,689	889,654	**2,565,045**	**8,680,830**
Free use									
Recreation stock	66,747	0	0	189,147	53,121	0	0	**189,147**	**53,121**
Other free use	520	1,872	14,054	2,091	12,532	899	2,823	**4,862**	**29,409**
Non-NFS lands	(226)	(60,570)	(457,644)	(389)	(5,817)	(24,133)	(23,953)	**(85,092)**	**(487,414)**
Crossing	84	34,587	4,976	34	26	46,190	3,936	**80,811**	**8,938**
Unauthorized use	118	6,528	9,081	238	5,851	2,389	300	**9,155**	**15,232**
Total 3/	81,680	1,393,125	7,743,793	213,728	147,024	1,242,167	896,713	**2,849,020**	**8,787,530**
Wild horses	0	0	0	1,387	16,724	0	0	**1,387**	**16,724**
Wild burros	0	0	0	283	1,411	0	0	**283**	**1,411**
Total actually grazed	81,860	1,393,125	7,743,793	215,398	165,159	1,242,167	896,713	**2,850,690**	**8,805,665**
Losses									
Poisonous plants		1,666		1,346		2,100		**5,112**	
Predators		793		88		12,502		**13,383**	
Other 4/		5,035		91		6,831		**11,957**	

1/ Permittees holding paid permits are not counted in other categories.
2/ An animal unit month (AUM) is the amount of grazing required by a 1,000 pound cow for 1 month.
3/ Non-NFS land data not included in totals.
4/ Includes losses due to thievery, natural death, and accidental death.

Table 49.—Range improvements by type—fiscal year 1983

Improvement type	Unit of measure	Units of construction completed	Total cost
Structural			
Water developments	Sites	1,760	2,260,986
Range fence	Miles	1,328.4	3,632,983
Pipeline	Miles	379.5	1,051,741
Other structural facilities	Sites	256	636,907
Subtotal		N/A 1/	7,582,617
Nonstructural			
Cover manipulation, brush	Acres	65,491	1,116,973
Range plant control	Acres	8,099	270,443
Forage improvement	Acres	68,478	904,378
Noxious farm weed control	Acres	20,526	511,604
Subtotal		162,594	2,803,398
Total		N/A	10,386,015

1/ N/A = not applicable.

Table 50.—Road and bridge construction and reconstruction by State—fiscal year 1983

State, Territory, or Commonwealth 1/	From appropriated funds			By timber purchasers		
	Roads	Bridges	Cost	Roads 2/	Bridges	Cost
	Miles	Number	1,000 dollars	Miles	Number	1,000 dollars
Alabama	17.5	1	1,270.0	29.1	0	468.0
Alaska	71.2	33	23,396.5 3/	60.3	14	8,153.7
Arizona	47.2	3	6,193.9	285.9	0	3,047.3
Arkansas	39.0	0	3,904.2	151.9	0	4,587.8
California	206.1	11	42,208.7	885.8	6	28,364.5
Colorado	55.1	6	8,847.5	163.5	0	1,269.3
Florida	.2	0	710.0	54.5	0	786.0
Georgia	5.8	0	2,893.2	39.6	0	530.0
Idaho	179.3	18	24,019.9	470.1	6	6,322.0
Illinois	0	0	358.8	6.1	0	88.3
Indiana	4.5	0	939.8	1.1	0	20.2
Kentucky	33.8	0	1,845.0	38.7	0	333.0
Louisiana	18.3	0	1,715.0	74.0	0	1,341.0
Maine	0	1	129.0	0	0	0
Michigan	42.8	2	2,213.5	51.2	0	213.2
Minnesota	58.1	3	4,929.6	46.8	0	279.0
Mississippi	0	0	899.0	136.2	0	1,572.0
Missouri	34.1	0	1,817.9	37.6	0	177.6
Montana	344.2	14	27,291.9	615.8	3	6,030.9
Nevada	0	1	417.1	0	0	0
New Hampshire	0	5	456.7	16.8	0	190.6
New Mexico	12.4	0	4,311.9	219.0	0	2,540.0
New York	0	0	0.8	0	0	0
North Carolina	65.1	11	4,088.9	88.5	0	1,794.0
North Dakota	0	0	216.6	0	0	0
Ohio	0	0	19.9	2.4	0	33.8
Oklahoma	6.9	0	301.0	6.7	0	464.0
Oregon	261.4	10	39,468.0	1,198.7	0	39,973.1
Pennsylvania	5.8	0	840.3	23.1	0	353.1
Puerto Rico	0	0	71.0	0	0	0
South Carolina	14.5	2	1,155.0	106.3	0	1,602.0
South Dakota	33.0	1	1,792.6	92.0	0	468.5
Tennessee	35.0	5	1,595.0	42.5	0	525.0
Texas	0	0	1,108.0	83.4	0	2,021.0
Utah	54.3	6	5,991.4	57.6	0	418.9
Vermont	5.1	1	653.4	.8	0	26.4
Virginia	108.0	2	4,715.9	67.0	0	385.0
Washington	135.0	11	19,326.2	431.5	0	15,256.3
West Virginia	37.6	0	2,609.4	16.1	0	229.8
Wisconsin	79.5	2	4,467.2	31.3	0	175.0
Wyoming	5.3	5	3,541.7	100.9	0	1,772.2
Total	2,016.1	154	252,731.4	5,732.8	29	131,812.5

1/ States not listed had no Forest Service road programs in 1983.
2/ Does not include 662 miles turned back to Forest Service for construction.
3/ Includes $19,735 of Tongass Timber Supply Fund.

Table 51.—Timber purchaser roads constructed by the Forest Service by State—fiscal year 1983

State or 1/ Commonwealth	Roads constructed	Cost
	Miles	1,000 dollars
Alabama	5.7	137.0
Arizona	38.6	119.2
Arkansas	27.2	803.3
California	51.1	2,270.8
Colorado	0	26.9
Florida	14.5	376.0
Georgia	0	170.0
Idaho	56.8	1,251.2
Kentucky	4.0	47.0
Louisiana	6.0	140.0
Michigan	11.4	96.7
Mississippi	1.2	22.0
Montana	197.2	2,865.1
New Hampshire	1.1	59.1
New Mexico	16.1	65.0
North Carolina	2.6	113.0
Oklahoma	5.6	198.0
Oregon	53.6	1,641.0
Pennsylvania	9.5	180.6
South Carolina	6.3	87.0
South Dakota	48.7	247.8
Texas	12.7	379.0
Washington	83.0	4,387.9
West Virginia	5.2	74.3
Wisconsin	4.1	41.9
Wyoming	0	32.8
Total	662.2	15,832.6

1/ States not listed had no timber purchaser roads constructed by the Forest Service in 1983.

Table 52.—State and Private Forestry funding—fiscal year 1983 compared to 1980-83 average

	1983		1980-83 average 1/	Percent of actual to average
	Actual	RPA		
	1,000 constant 1983 dollars 2/			
Forest pest management	**27,844**	45,607	25,254	110
Fire protection	**14,411**	36,256	19,421	74
Forest management and utilization	**17,080**	50,606	22,873	75
Special projects	**3,500**	5,881	6,866	51
Total	**62,835**	138,350	74,414	84

1/ In order that a comparison may be made with 1983 Actual, general administration has been eliminated from individual line items in calculating the average. Total appropriated general administration funds are included in the "General Administration" line item on table 11.
2/ GNP implicit price deflator used for 1980-82.

Table 53.—Summary of State and Private Forestry accomplishments compared to RPA and funded output levels—fiscal year 1983 appropriated accounts

	Unit of measure 1/	Output Level			Accomplishment comparison		
		RPA	Funded	Actual	Percent of RPA	Change from funded level	Percent of funded level
Cooperative Resource Protection							
Forest Pest Management 2/							
Insect and disease management surveys	MM acres	511	410	599	117	+189	146 3/
Insect and disease suppression	MM acres	-- 4/	0	2.0	--	+2	100
Insect and disease special projects	Projects	--	11	22.0	--	+11	200 3/
Cooperative Resource Management							
Rural Forestry Assistance							
Forest land management plans	MM acres	4.2	2.7	3.4	81	+0.7	126
Timber prepared for harvest	MM cubic feet	312	145.5	246.5	79	+101.0	169
Reforestation 5/	M acres	1,019	387.2	513.5	50	+126.3	133
Timber stand improvement 5/	M acres	660	169.9	314.3	48	+144.4	185
Woodland owners assisted	M owners	246	133.5	136.3	55	+2.8	102
Improved wood utilization	MM cubic feet	184	77.0	116.0	63	+39.0	151
Seedling production	MM seedlings	--	482.3	743.0	--	+260.7	154
Urban Forestry Assistance	Urban areas assisted	--	2,950.0	3,655.0	--	+705.0	124
Assistance in Management, Planning, and Technology Implementation							
State forest resource planning	MM acres	150	150	268	179	+118	178
Management assistance	Assists	--	75	156	--	+81	208

1/ M = thousand, MM = million.
2/ Includes accomplishments on National Forest System and other Federal lands, as well as State and Private lands.
3/ Reflects accomplishments using appropriated funds as well as reprogrammed, carryover, and allocated funds in 1983.
4/ -- = Not applicable; goals for these items were not included in the RPA.
5/ Includes Forestry Incentives Program and Agricultural Conservation Program accomplishments.

Table 54.—Summary of State and Private Forestry funding and accomplishments compared to RPA and funded output levels—fiscal year 1983 transfer accounts

	1983 Funding	Unit of 1/ measure	Output level			Accomplishment comparison	
			RPA	Funded	Accomplished	Change from funded level	Percent of funded level
	1,000 dollars						
Rural Community Fire 2/ Protection, FmHA	3,250	Approved applications	--3/	2,824	3,065	+241	109
Watershed and Flood Prevention, SCS	3,670	Projects	185	98 4/	98	0	100
Watershed Planning, SCS	250	Plans	135	44 4/	44	0	100
Resource Conservation and Development, SCS	768	Projects	74	52 4/	52	0	100
River Basin Surveys & Investigations, SCS	1,229	Plans	46	42 4/	42	0	100
Forestry Incentives Program, ASCS	1,250 5/						
Reforestation		M acres	6/	6/	144.8	--	--
Timber stand improvement		M acres	6/	6/	58.4	--	--
Agricultural Conservation Program, ASCS	1,900 5/						
Reforestation		M acres	6/	6/	66.5	--	--
Timber stand improvement		M acres	6/	6/	36.7	--	--
Total	12,317	--		-- --	--	--	

1/ M = thousand
2/ Program first authorized after RPA; therefore, no RPA figures shown.
3/ -- = not applicable.
4/ Level reflects decrease in funding for forestry aspects of SCS projects.
5/ Includes both technical assistance and cost share funds allocated for the Forestry Incentives and Agricultural Conservation Programs (administered jointly by ASCS and FS).
6/ RPA and funded targets for Forestry Incentives and Agricultural Conservation Programs were included in a total with those of Rural Forestry Assistance. (See table 53.)

Table 55.—Pesticide Use Report

Common name	Target pest/ purpose	Quantity used/treated	
		Pounds 1/	Units 2/
Herbicides			
Asulam	Conifer Release	1,162.00	488.00 (A)
Atrazine	Conifer Release	25,474.00	6,377.00 (A)
	Site Preparation	5,002.00	1,732.00 (A)
Dalapon	Conifer Release	4,420.00	1,062.00 (A)
	Site Preparation	71.00	17.00 (A)
Dicamba	Site Preparation	584.00	146.00 (A)
Fosamine Ammonium	Conifer Release	453.00	151.00 (A)
	Rights-of-way	1,253.00	110.00 (A)
Glyphosate	Conifer Release	18,662.00	9,887.00 (A)
	Rights-of-way	405.00	135.00 (A)
	Site Preparation	15,363.00	5,036.00 (A)
Hexazinone	Conifer Release	16,889.00	6,907.00 (A)
	Site Preparation	5,385.00	2,338.00 (A)
Paraquat	Cannabis	3.00	3.00 (A)
Picloram	Noxious Weeds	10.00	40.00 (A)
	Range Improvement	74.00	60.00 (A)
	Rights-of-way	1,107.00	281.00 (A)
	Site Preparation	34.00	20.00 (A)
Simazine	Site Preparation	125.00	25.00 (A)
Tebuthiuron	Range Improvement	789.30	1,158.30 (A)
Triclopyr	Conifer Release	7,959.00	5,274.00 (A)
	Rights-of-way	829.00	276.00 (A)
	Site Preparation	1,112.00	524.00 (A)
2,4-D	Conifer Release	35,480.00	14,121.00 (A)
	Noxious Weeds	60.00	40.00 (A)
	Range Improvement	14,860.00	9,037.00 (A)
	Rights-of-way	557.00	399.00 (A)
	Site Preparation	4,533.00	1,630.00 (A)
2,4-D/Picloram 4:1	Rights-of-way	351.00	310.00 (A)
Amitrole	Conifer Release	45.00	89.00
	Hardwood Release	43.00	88.00
	Noxious Weeds	190.00	77.00
	Poisonous Plant Control	10.00	10.00
	Rights-of-way	1,645.00	454.00
	Rights-of-way	10.00	9.00 Side miles
Ammonium Sulfamate	General Weed Control	154.00	21.00
	Rights-of-way	1,080.00	27.00
	Wildlife Habitat Improvement	637.00	40.00
Asulam	Conifer Release	415.00	200.00
Atrazine	Conifer Release	7,095.00	2,393.00
	Firebreak Management	319.00	91.00
	General Weed Control	196.40	135.50
	Hardwood Release	86.00	32.00
	Noxious Weeds	1.00	1.00
	Range Improvement	20.00	10.00
	Rights-of-way	3,244.00	305.00
	Rights-of-way	316.00	37.00 Side miles
	Site Preparation	5,264.20	1,816.00
Bifenox	Nursery Weeds	924.00	365.00
Bromacil	General Weed Control	276.00	54.50
	Rights-of-way	1,255.00	259.00
	Rights-of-way	280.00	11.00 Side miles

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated		
		Pounds 1/	Units 2/	
Herbicides (Cont.)				
Bromacil/Diuron	General Weed Control	10.00	1.00	
	Rights-of-way	228.30	59.00	
	Rights-of-way	264.00	72.50	Side miles
Cacodylic Acid	Rights-of-way	41.00	11.00	
Dacthal	Nursery Weeds	47.00	5.00	
Dalapon	Conifer Release	8,468.00	1,820.00	
	General Weed Control	24.00	2.00	
	Hardwood Release	1,676.00	434.00	
	Site Preparation	16,220.80	2,946.00	
Dalapon/Atrazine	Conifer Release	1,137.00	542.00	
	Site Preparation	17,578.00	1,428.00	
DCPA	General Weed Control	3.00	1.00	
	Nursery Weeds	738.00	82.00	
Dicamba	Conifer Release	784.00	1,220.00	
	Firebreak Management	580.00	449.00	
	Noxious Weeds	179.00	153.00	
	Range Improvement	516.50	207.00	
	Rights-of-way	307.00	82.00	
	Rights-of-way	30.00	52.00	Side miles
	Site Preparation	2,093.00	2,010.00	
	Wildlife Habitat Improvement	26.00	34.00	
Dichlobenil	General Weed Control	7.00	1.00	
Diphenamid	General Weed Control	5.00	3.00	
	Nursery Weeds	636.00	128.00	
Diquat	Aquatic Weed Control	14.00	19.25	
Diuron	Firebreak Management	7.00	3.00	
	General Weed Control	8.00	2.00	
	Rights-of-way	372.00	83.00	
	Rights-of-way	136.00	14.00	Side miles
Endothall	Aquatic Weed Control	250.00	23.00	
	Aquatic Weed Control	28.00	2.00	Acre feet
EPTC	General Weed Control	1,745.00	189.00	
Fosamine Ammonium	General Weed Control	32.00	9.00	
	Rights-of-way	2,977.00	827.00	
	Rights-of-way	3,079.00	1,206.00	Side miles
	Site Preparation	286.00	40.00	
	Wildlife Habitat Improvement	70.00	58.00	
Glyphosate	Aquatic Weed and Algae	24.00	8.00	
	Conifer Release	12,906.00	9,478.00	
	Firebreak Management	150.00	115.00	
	General Weed Control	761.90	285.45	
	Hardwood Release	58.00	76.00	
	Noxious Weeds	404.00	584.00	
	Nursery Weeds	733.50	237.00	
	Poisonous Plant Control	37.00	38.00	
	Range Improvement	97.00	100.00	
	Rights-of-way	736.30	397.00	
	Rights-of-way	41.00	25.20	Side miles
	Site Preparation	6,124.68	5,694.40	
	Wildlife Habitat Improvement	232.00	77.00	

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated		
		Pounds 1/	Units 2/	
Herbicides (Cont.)				
Hexazinone	Conifer Release	36,794.60	21,300.00	
	General Weed Control	35.00	15.50	
	Noxious Weeds	6.00	1.38	
	Nursery Weeds	36.00	15.00	
	Rights-of-way	10.00	50.00	
	Site Preparation	6,828.10	4,006.10	
	Wildlife Habitat Improvement	1,823.00	1,234.00	
Linuron	General Weed Control	2.50	5.00	
Maleic Hydrazide	Rights-of-way	384.00	105.00	
Mefluidide	Rights-of-way	24.00	32.00	
MCPA	Rights-of-way	7.00	2.00	
MSMA	Hardwood Release	26.00	11.00	
	Rights-of-way	292.00	112.00	
Napropamide	Nursery Weeds	43.00	62.00	
Oryzalin	General Weed Control	10.00	3.00	
	Rights-of-way	26.00	7.00	
Oust	Conifer Release	18.00	77.00	
	General Weed Control	50.00	10.00	
	Rights-of-way	75.00	320.00	
	Site Preparation	15.00	20.00	
Oxyfluourfen	General Weed Control	17.00	33.00	
	Nursery Weeds	179.00	285.00	
Picloram	Conifer Release	377.00	1,101.00	
	Firebreak Management	4,100.00	1,422.00	
	Noxious Weeds	1,184.00	2,845.00	
	Poisonous Plant Control	691.00	425.00	
	Range Improvement	11,714.10	8,635.00	
	Rights-of-way	2,933.00	5,372.00	
	Site Preparation	232.00	128.00	
	Thinning	31.00	31.00	
	Wildlife Habitat Improvement	3,163.00	2,641.00	
Prometon	General Weed Control	341.00	12.00	
	Noxious Weeds	14.00	7.00	
	Rights-of-way	800.00	808.00	
Simazine	Conifer Release	361.00	180.00	
	General Weed Control	466.00	86.00	
	Hardwood Release	224.00	73.00	
	Nursery Weeds	64.00	8.00	
	Nursery Weeds	5.20	2,000.00	Square feet
	Range Improvement	136.00	110.00	
	Rights-of-way	7,352.00	1,529.00	
	Rights-of-way	257.00	1,673.00	Posts
	Rights-of-way	23.00	2.00	Side miles
	Site Preparation	481.00	136.00	
Sodium Metaborate Tetra	Rights-of-way	40.00	20.00	Posts
Tebuthiuron	Range Improvement	321.60	323.00	
	Rights-of-way	349.00	201.00	
	Rights-of-way	94.00	55.90	Side miles
	Thinning	32.00	4.00	

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated		
		Pounds 1/	Units 2/	
Herbicides (Cont.)				
Triclopyr	Conifer Release	1,193.00	1,620.00	
	Poisonous Plant Control	1.00	1.00	Side mile
	Rights-of-way	959.00	445.00	
	Rights-of-way	1,012.00	162.40	Side miles
	Site Preparation	693.00	225.00	
	Wildlife Habitat Improvement	8.00	5.00	
Trifluralin	Nursery Weeds	2.00	2.00	
2,4-D	Aquatic Weed Control	40.00	2.00	
	Conifer Release	54,333.00	17,810.00	
	Firebreak Management	1,250.00	493.00	
	General Weed Control	407.00	211.00	
	General Weed Control	176.00	450.00	Trees
	Noxious Weeds	1,524.00	2,096.00	
	Nursery Weeds	586.60	329.80	
	Poisonous Plant Control	21.00	7.00	
	Range Improvement	12,874.90	10,047.50	
	Rights-of-way	999.00	180.00	Side miles
	Rights-of-way	2,013.60	642.80	
	Site Preparation	25,795.00	10,753.00	
	Thinning	1,979.00	524.00	
	Wildlife Habitat Improvement	5,599.00	3,152.00	
2,4-DP	Conifer Release	1,512.00	779.00	
	Rights-of-way	84.00	42.00	
	Rights-of-way	890.00	269.50	Side miles
	Site Preparation	86.00	77.00	
2,4-D/Dalapon	Site Preparation	877.00	511.00	
2,4-D/Dicamba 2:1	Noxious Weeds	1,594.00	779.00	
	Range Improvement	6.00	8.00	
	Rights-of-way	9.00	15.00	
	Site Preparation	1,361.00	243.00	
	Wildlife Habitat Improvement	33.00	79.00	
2,4-D/Dicamba 3:1	Noxious Weeds	30.00	313.00	
	Range Improvements	1,116.30	515.30	
	Rights-of-way	250.00	25.00	
2,4-D/Dicamba/MCPP	General Weed Control	1.32	5.29	
2,4-D/DSMA/Bromacil	Rights-of-way	110.00	330.00	
2,4-D/Glyphosate	Noxious Weeds	32.00	24.00	
2,4-D/Picloram 4:1	Conifer Release	23,921.00	15,634.00	
	General Weed Control	74.00	37.00	
	Noxious Weeds	166.00	84.00	
	Range Improvement	1,526.00	752.70	
	Rights-of-way	3,103.50	923.00	
	Site Preparation	18,314.00	12,233.00	
	Thinning	1,774.00	4,320.00	
	Wildlife Habitat Improvement	442.00	357.00	
2,4-D/Picloram 2:1	Noxious Weeds	30.00	20.00	
2,4-D/Triclopyr	General Weed Control	8.00	2.00	
	Rights-of-way	48.00	5.00	

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Herbicides (Cont.)				
2,4-D/2,4-DP 2:2	Conifer Release	190.00	246.00	
	Hardwood Release	436.00	199.00	
	Rights-of-way	102.00	119.00	
	Rights-of-way	4,368.00	351.60	Side miles
	Site Preparation	800.00	200.00	
2,4,5-T	Poisonous Plant Control	4.00	20.00	
Total 1983 Herbicide Use (Including Aerial Use)		526,671.20	245,058.77	
Total Aerial Use		163,006.30	67,584.30	
Insecticides				
Acephate	Pandora Moth	525.00	700.00	(A)
Azinphos-Methyl	Seed & Cone Insects	5,974.00	107,480.00	(A) Trees
Bacillus thuringiensis	Western Spruce Budworm	173,664.00	BIUs 14,472.00	(A)
	Hardwood Defoliators	56.00	75.00	(A)
Carbaryl	Pandora Moth	50.00	50.00	(A)
	Western Spruce Budworm	465,959.00	465,959.00	(A)
Diflubenzuron	Pandora Moth	3.12	50.00	(A)
Fenalerate	Seed & Cone Insects	228.00	18,240.00	(A) Trees
Malathion	Pandora Moth	40.00	50.00	(A)
Mexacarbate	Western Spruce Budworm	1,262.00	10,095.00	(A)
Acephate	Seed & Cone Insects	122.00	24.00	
	Seed & Cone Insects	0.75	70.00	Trees
Amdro	Ants	6.00	62.00	
	Ants	15.00	200.00	Hills
Azinphos-Methyl	Seed & Cone Insects	244.00	87.00	
	Seed & Cone Insects	2,967.00	20,700.00	Trees
	Scales	1.00	1.00	
Carbaryl	Fleas	146.00	178.00	
	Grasshoppers	2.00	2.00	
	Miscellaneous Insects	48.00	24.00	
	Mountain Pine Beetle	378.00	66.00	
	Mountain Pine Beetle	3,381.50	8,716.00	Trees
	Nursery Insects	4.00	3.00	
	Spruce Beetle	28.00	30.00	Trees
	Sucking Insects	20.00	24.00	
	Western Pine Beetle	21.40	49.00	Trees
Carbofuran	Miscellaneous Insects	11.00	20.00	
	Seed & Cone Insects	7,310.00	8,911.00	Trees
Chlordane	Termites	1.00	1.00	Building
Chlorpyrifos	Mountain Pine Beetle	.30	10.00	Trees
	Pales Weevil	100.00	370.00	
	Southern Pine Beetle	4.00	216.00	Trees
Coumaphos	Cattle Ticks & Lice	231.00	918.00	Cattle
	Cattle Ticks & Lice	3.00	5.00	Treatment stations

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Insecticides (Cont.)				
Diazinon	Bagworm	1.00	1.00	
	Cutworms	194.00	168.00	
Dimethoate	Miscellaneous Insects	0.43	ounce 2.00	
	Seed & Cone Insects	6.00	70.00	Trees
	Nursery Insects	13.00	68.00	
Ethylene Dibromide	Mountain Pine Beetle	3,836.00	26,394.00	Trees
Fatty Acids	Balsam Woolly Aphid	171.00	8,150.00	Trees
Fenvalerate	Seed & Cone Insects	200.00	8,000.00	Trees
	Seed & Cone Insects	38.00	10.00	
	Grasshoppers	3.00	21.00	
Fenitrothion	Mountain Pine Beetle	0.30	10.00	Trees
Lindane	Balsam Woolly Aphid	96.00	3,300.00	Trees
	Bark Beetles	7.50	620.00	Trees
	Cutworms	3.20	ounces 0.25	
	Greenhouse Insects	1.00	10,000.00	Seedlings
	Mountain Pine Beetle	562.05	10,282.00	Trees
	Powderpost Beetles	6.00	9.00	Buildings
	Seed & Cone Insects	25.00	5,350.00	Trees
	Southern Pine Beetle	10.00	168.00	Trees
	Spruce Beetle	13.30	30.00	Trees
	Turpentine Beetle	2.00	25.00	Trees
Malathion	Aphids	3.00	1.00	
	General Insect Control	12.00	75.00	Buildings
	Grasshoppers	320.00	200.00	
	Miscellaneous Insects	14.70	ounces 2.10	
	Mosquitoes	291.00	300.00	
	Sawflies	2.00	8.00	
	Seed & Cone Insects	63.00	10.00	
	Seed & Cone Insects	12.00	8,000.00	Trees
Methomyl	General Insect Control	99.00	20.00	
Methoxychlor	General Insect Control	2.00	3.00	Tree groups
Oxydemeton Methyl	Aphids	.20	350.00	Trees
	Seed & Cone Insects	21.81	215.00	
	Seed & Cone Insects	1.00	500.00	Injections
Parathion	Scales	2.00	1.00	Acre
Pheromones	General Insect Control	1.32	150.00	
Pyrethrin	Gypsy Moth	4.00	83.00	Trees
	Mosquitoes	7.00	192.00	
Petroleum Oil	Mites	1.00	1.00	Acre feet
	Mosquitoes	239.00	17.00	
	Scale Insects	8.00	35.00	
Temephos	Mosquitoes	5.00	102.00	
Tetrachlorvinphos	General Insect Control	66.00	22.00	
Toxaphene	Cattle Ticks & Lice	40.00	2,000.00	Cattle
Total 1983 Insecticide Use (Including Aerial Use)		495,527.55	493,856.35 3/	
Total Aerial Use		474,097.12	491,451.00	

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Algicides				
Copper Compounds	Aquatic Weed & Algae Control	1.00	1.00	Acre foot
	Aquatic Weed & Algae Control	1.00	7.00	
Copper Sulfate	Aquatic Weed & Algae Control	62.00	11.00	
Total 1983 Algicide Use		64.00	18.00	
Fungicides and Fumigants				
Benomyl	Damping Off	19.00	600,000.00	Seedlings
	Fusarium	96.00	31.00	
	Nursery Fungi	34.00	21.71	
	Phompsis Canker	98.00	152.00	
	Walnut Anthracnose/Research	1.30	20.00	Trees
Borax	Fomes annosus	6,850.00	1,875.00	
	Fomes annosus	515.00	9,610.00	Stumps
	Fomes annosus	22.00	700.00	Trees
	Nursery Fungi	1.50	200.00	Square feet
Bordeaux Mixture	Tip Blight	2.71	1.30	
Captafol	Walnut Anthracnose/Research	3.90	20.00	Trees
Captan	Damping off	58.00	9.00	
	Fusarium	1.20 ounces	136.00	Square feet
	Nursery Fungi	175.50	28.78	
	Nursery Fungi	3.00	500.00	Lbs. seed
	Nursery Fungi	6.00	1.00	Greenhouse
	Other Diseases	2.00	1.00	
	Seedling Root Diseases	84.00	28.00	
Chlorothalonil	Botrytis	28.50	600,000.00	Seedlings
	Nursery Blight	1.00	1.00	
	Nursery Fungi	64.00	306.00	
	Other Diseases	20.60	6.41	
	Phoma Blight	336.00	168.00	
	Phompsis Canker	171.00	75.00	
	Walnut Anthracnose/Research	3.80	20.00	Trees
Dazomet	Nursery Fungi	88.00	1.00	
DCNA	Greenhouse Diseases	30.00	1.00	Greenhouse
	Nursery Fungi	41.00	41.00	
Dichloropropene	Nematodes	1,350.00	73.00	
Dodine	Other Diseases	1.00	1.00	
Ethazol	Nursery Root Rot	15.00	1.00	
Ferbam	Fusiform Rust	68.00	1.00	
	Southern Cone Rust	60.00	10.00	
Lime Sulphur	Seed mold, Mildew	4.00	1.00	
Maneb	Lophodermium Needle Blight	270.00	257.00	
Metain-Sodium	Nursery Fungi	60.00	0.20	
Metalaxyl	Nursery Fungi	5.00	3.00	

See footnotes at end of table.

Table 55.—Pesticide Use Report—Continued

Common name	Target pest/ purpose	Quantity used/treated Pounds 1/	Units 2/	
Fungicides and Fumigants (Cont.)				
Methyl Bromide/ Chloropicrin	Ants	234.00	76.00	Mounds
	Damping Off	9.00	100.00	Square feet
	Nematodes	857.00	3.00	
	Nursery Fungi	65,025.00	192.20	
Thiophanate-Methyl	Walnut Anthracnose/Research	2.80	20.00	Trees
Thiram	Damping Off	11.00	4,477.00	Lbs. seed
Triadimefon	Fusarium	0.60	46.00	
Zineb	Shot Hole Disease	6.00	3.00	
Total 1983 Fungicide and Fumigant Use		76,734.21	3,334.60	4/
Predacides and Pisicides				
Antimycin	Fish	13.00	16.00	
Rotenone	Fish	269.00	205.00	
	Fish	1.20	7.40	Stream miles
Sodium Cyanide	Coyotes	1.95	72.00	Bait stations
	Coyotes	2.64	30,000.00	
Total 1983 Predacide and Pisicide Use		287.79	30,221.00	
Repellents				
Putrescent Egg Solids	Deer	1,862.00	11,555.00	
Thiram	Birds	7.00	183.00	
	Commensal Rodents	1,994.00	15,454.00	
	Deer	15.00	2.50	
	Other Predators	400.00	573.00	
Total 1983 Repellent Use		4,278.00	27,767.50	

See footnotes at end of table.

Table 55.—Pesticide Use Report —Continued

Common name	Target pest/ purpose	Quantity used/treated		
		Pounds 1/	Units 2/	
Rodenticides				
Aluminum Phosphide	Ground Squirrels	187.00	500.00	Burrows
	Prairie Dogs	144.00	390.00	
Carbon Monoxide	Ground Squirrels	139.00	10.00	
Endrin	Commensal Rodents	2.00	400.00	Lbs. seed
Sodium Monofluracetate	Pocket Gophers	.30	5.00	
Strychnine	Pocket Gophers	2,204.24	38,607.50	
	Pocket Gophers	4.00	5.00	Treatment stations
	Pocket Gophers	1.70 ounces	5.00	
Sodium Nitrate	Ground Squirrels	24.00	2.00	
Warfarin	Commensal Rodents	8.00	8.00	Bait stations
	Commensal Rodents	60.00	240.00	
Zinc Phosphide	Commensal Rodents	28.18	142.00	
	Ground Squirrels	4.00	1,600.00	Square feet
	Mice	10.00	50.00	
	Prairie Dogs	196.00	18,245.00	
Total 1983 Rodenticide Use		3,008.72	57,696.50	
Grand Total Pesticide Use		1,106,571.30	857,952.72	

1/ Quantities expressed in pounds unless otherwise indicated.
2/ Units treated are expressed in acres unless otherwise indicated. Aerial applications are indicated by (A). All others are ground applications.
3/ Plus 2,918 cattle, 235,254 trees, and 85 buildings.
4/ Plus 780 trees, 1,200,000 seedlings, and 500 pounds of seed.

Table 56.—Wildfires on State and private lands protected under the Cooperative Forestry Assistance Act (P.L. 95-313)—calendar year 1982

State, Territory, or Commonwealth	Area protected	Human-caused fires	Human-caused area burned
	1,000 acres		Acres
Alabama	25,029	5,035	95,213
Alaska	58,645	149	1,286
Arizona	18,328	72	4,596
Arkansas	20,698	2,047	37,132
California	32,843	7,149	125,844
Colorado	25,958	1,028	10,136
Connecticut	2,390	1,383	1,839
Delaware	557	31	421
Florida	27,102	4,288	99,342
Georgia	27,279	6,440	24,653
Guam	82	537	5,855
Hawaii	3,306	92	936
Idaho	6,026	158	442
Illinois	8,453	47	545
Indiana	7,328	164	1,403
Iowa	7,612	703	329
Kansas	19,793	3,376	64,743
Kentucky	16,865	2,308	37,660
Louisiana	20,939	4,759	45,396
Maine	17,743	813	1,523
Maryland	3,700	904	12,253
Massachusetts	3,581	5,428	6,458
Michigan	19,675	475	3,838
Minnesota	22,830	944	18,260
Mississippi	19,858	6,001	73,443
Missouri	16,587	2,913	28,191
Montana	34,839	154	281
Nebraska	27,154	1,065	29,630
Nevada	8,777	139	1,164
New Hampshire	4,631	434	195
New Jersey	2,705	1,663	11,588
New Mexico	40,200	241	17,777
New York	16,958	600	3,382
North Carolina	20,817	3,672	79,634
North Dakota	31,483	261	4,775
Ohio	5,823	1,312	4,560
Oklahoma	5,087	1,501	22,426
Oregon	13,099	591	4,229
Pennsylvania	19,541	1,528	9,394
Puerto Rico	829	1/	1/
Rhode Island	512	210	141
South Carolina	13,289	4,811	20,660
South Dakota	25,816	360	6,151
Tennessee	12,879	3,014	29,305
Texas	22,123	1,925	22,268
Utah	14,724	188	13,278
Vermont	4,638	233	934
Virginia	18,519	2,636	12,586
Washington	13,177	825	3,813
West Virginia	12,833	2,225	39,428
Wisconsin	18,898	1,101	2,576
Wyoming	21,341	458	11,075
Total	843,899	88,391	1,052,987

1/ No data available.

Table 57.—Summary of selected cooperative forest management and processing program activities—selected fiscal years

	Woodland owners assisted	Timber sale assistance--volume marked	Loggers and processors assisted
		MBF 1/	
1945	8,093	411,330	0
1950	22,828	518,566	0
1955	34,828	549,373	8,182
1960	82,188	569,178	8,099
1965	99,074	716,950	9,248
1970	115,197	1,225,520	13,620
1971	127,828	860,950	14,627
1972	274,001	955,627	5,290
1973	106,422	1,578,664	4,855
1974	117,990	907,311	5,353
1975	140,940	677,532	5,405
1976	105,184	596,599	15,318
1976-77 (T.Q.) 2/	25,253	220,649	5,849
1977	133,619	921,171	29,101
1978	165,329	1,120,743	12,749
1979	183,585	755,103	11,393
1980	176,385	870,964	11,582
1981	164,279	683,181	18,609
1982	141,472	841,475	15,470
1983	**136,265**	**872,125**	**8,717**

1/ MBF = thousand board feet.
2/ Transition quarter.

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Table 58.—Summary of selected cooperative forest management and processing activities by Region—fiscal year 1983

Assistance activity	Unit of measure 1/	Regions				
		Northern	Rocky Mountain	South-western	Inter-mountain	Pacific Southwest
Woodland owners assisted	Number	1,824	3,169	258	576	3,931
Assists to loggers and processors	Number	88	407	85	50	265
Forest management plans prepared	Number	365	547	61	97	297
	M acres	29.2	35.4	117.5	26.2	77.4
Reforestation						
Planting	Acres	390	975	304	469	5,985
Seeding	Acres	0	82	0	76	4
Management for natural regeneration	Acres	10	517	1,210	180	2,571
Timber stand improvement	Acres	1,288	3,228	561	254	3,794
Outdoor recreation development	Acres	1,321	4,330	2,559	4,355	4,241
Wildlife habitat development	Acres	80	6,711	3,142	124	26,276
Forested range improvement	Acres	530	4,509	3,110	8,875	6,529
Timber sale assistance volume harvested	M cubic feet	1,265	7,301	1,539	1,335	620
Improved utilization						
Harvesting	M cubic feet	715	1,552	1,270	1	2,272
Primary processing	M cubic feet	1,861	708	576	7	1,858
Secondary processing and drying	M cubic feet	72	205	0	1	13
Fuel and byproducts	M cubic feet	386	1,727	101	221	248
Urban forestry assistance activities	Urban areas assisted	73	278	18	38	346
Referrals to consulting foresters	Number	76	218	8	13	662

1/ M = thousand.

Regions				
Pacific Northwest	Alaska	Southern Region	North-eastern Area	Total
10,197	109	51,730	64,390	136,265
115	29	1,126	6,552	8,717
2,590	37	27,795	20,812	52,601
111.2	15.3	1,961.3	1,032.5	3,406.0
19,549	330	342,443	43,654	414,099
0	0	10,687	613	11,462
12,648	0	43,079	27,716	87,931
25,137	24	210,881	69,164	314,331
32	300	50,715	165,025	232,878
2,587	0	259,035	233,962	531,917
2,272	0	34,918	8,230	68,973
8,896	2,750	162,347	60,483	246,536
5,028	10	11,911	13,260	36,019
14,520	175	11,433	8,442	39,580
0	0	3,359	2,599	6,249
0	200	22,419	8,804	34,106
59	8	787	2,048	3,655
298	20	4,666	6,467	12,428

Table 59.—Summary of selected cooperative forest management and processing activities by State—fiscal year 1983

State, Territory, or Commonwealth	Woodland owners assisted	Reforestation assistance	Timber stand improvement 1/ assistance	Timber sale assistance--volume harvested	Assists to loggers and processors	Improved utilization	State nursery production
		Acres	Acres	1,000 cubic feet		1,000 cubic feet	1,000 trees
Alabama	5,171	41,696	35,915	5,411	80	4,462	72,000
Alaska	190	330	24	2,750	29	385	308
Arizona	88	1,492	191	251	46	212	0
Arkansas	1,270	15,822	5,229	126	17	3,879	15,836
California	3,381	8,065	3,778	318	203	4,015	4,246
Colorado	879	780	1,054	5,119	218	2,087	1,404
Connecticut	872	2,243	759	334	2	41	1,758
Delaware	882	2,609	153	982	8	421	736
Florida	3,916	57,111	21,207	7,925	111	15,274	73,300
Georgia	6,855	49,088	11,588	5,011	92	4,307	97,921
Guam	19	45	16	0	1	0	32
Hawaii	531	450	0	302	61	376	341
Idaho	962	156	506	1,030	21	196	440
Illinois	2,173	725	4,202	880	0	0	3,902
Indiana	1,902	6,487	7,277	1,020	438	2,417	4,816
Iowa	1,160	4,531	651	559	16	861	5,520
Kansas	863	474	548	324	67	240	202
Kentucky	1,492	3,565	3,737	3,264	59	1,438	10,618
Louisiana	1,485	9,739	24,271	921	29	788	76,500
Maine	1,975	2,301	2,949	3,335	901	7,406	2,231
Maryland	6,320	5,604	1,367	4,396	21	2,627	3,252
Massachusetts	2,931	7,942	6,647	7,090	32	2,110	0
Michigan	669	4,344	3,222	279	9	1,576	6,052
Minnesota	7,047	4,806	3,033	5,974	532	2,468	20,864
Mississippi	10,202	60,976	44,907	9,259	263	5,299	62,146
Missouri	2,288	3,791	5,920	4,087	513	590	10,352
Montana	515	107	772	194	62	2,828	754
Nebraska	588	265	159	2	7	0	0
Nevada	315	476	197	636	5	22	205
New Hampshire	5,614	1,086	3,110	3,749	991	3,437	485
New Jersey	731	3,933	630	682	19	315	176
New Mexico	170	22	370	1,288	39	1,735	0
New York	6,326	2,072	7,397	8,141	2,200	2,436	5,907
North Carolina	5,077	55,252	3,075	27,854	143	8,506	51,660
North Dakota	347	137	10	41	5	10	1,096
Ohio	4,050	1,411	7,192	2,879	14	800	6,688
Oklahoma	1,580	1,856	1,281	315	4	103	2,037
Oregon	5,494	25,662	18,445	58	57	8,628	19,000
Pennsylvania	3,025	3,872	3,631	895	261	2,684	4,017
Puerto Rico	1,285	525	150	8	2	8	517
Rhode Island	292	61	172	181	0	0	0
South Carolina	2,488	19,118	4,341	3,048	15	1,523	45,632
South Dakota	251	2	684	137	25	174	1,064
Tennessee	1,313	2,976	397	1,412	152	1,387	6,753
Texas	2,381	28,490	34,432	4,239	148	1,775	19,414
Utah	261	249	57	699	45	208	337
Vermont	2,609	131	2,139	4,224	529	2,079	300
Virgin Islands	23	30	18	0	0	0	0
Virginia	7,192	49,965	20,333	93,554	11	373	62,765
Washington	4,703	6,535	6,692	8,838	58	10,920	15,977
West Virginia	4,861	2,040	3,234	1,408	54	635	5,028
Wisconsin	8,663	11,994	5,479	9,388	12	202	18,372
Wyoming	588	53	783	1,719	90	1,691	0
Total	136,265	513,492	314,331	246,536	8,717	115,954	742,961

Table 60.—Works of improvement installed in watershed protection projects—fiscal years 1980-83 and total to date

	Unit of measure	1983	1982	1981	1980	Total 1954-83
Channel improvement	Miles	0	0	0	0	6.6
Channel stabilization	Miles	0	0	0	0	13
Contour terrace and furrows	Miles	0	0	0	0	916.7
Area treated	Acres	0	0	0	0	14,409
Gully control and stabilization	Miles	0	0	0.8	0	195.1
Grade stabilization structures	Number	0	0	0	0	3,296
Critical area stabilization by tree planting and other measures	Acres	464	490	219	452.2	43,948.8
Forest road and roadbank stabilization	Miles	2.2	38	14.7	551.9	1,948.2
Area treated	Acres	2.4	24	27.2	2,138.4	5,952.7
Fire roads, trails, and firebreaks and fuelbreaks	Miles	35.6	28.6	61	21.7	1,657.2
Fire control water developments	Number	0	0	0	0	43
Fire towers	Number	0	0	0	0	8
Intensified fire protection	Acres	56,230	10,830	20,075	140.0	2,388,330
Heliports and helispots	Number	0	0	0	0	42
Mobile fire equipment	Number	7	0	0	0	67
Other fire control improvements	Number	5	4	0	0	467
Radio installations	Number	0	0	0	0	52
Forest watershed management						
Plans prepared	Number	723	1,052	3,790	1,322	24,654
Area included	Acres	45,129	52,294	60,353	90,612	2,148,091
Forest stand improvement	Acres	0	0	0	20	1,082,466
Proper harvest cutting	Acres	7,463	11,768	9,555	13,436	547,158
Range and grass seeding	Acres	12	27	739	121	48,389
Tree planting and seeding	Acres	6,240	7,653	7,693	8,289	298,437
Revegetation, surface mined areas	Acres	1	916	700	0	3,422
Woodland thinning and release	Acres	3,372	3,387	3,824	4,554	712,592
Woodland grazing control	Acres	3,370	884	1,113	857	294,505
Recreation area development	Acres	145	753	88	384	32,760
Wildlife habitat development	Acres	5,910	2,969	2,094	1,266	38,644
Wildlife ponds	Number	0	3	4	22	82

Table 61.—Works of improvement installed in flood prevention projects—fiscal year 1980-83 and total to date

	Unit of measure	1983	1982	1981	1980	Total 1944-83
Structural measures						
Access road construction	Miles	107	0	6.0	9.0	267.0
Channel improvement	Miles	1	0	0	1.0	40.6
Channel stabilization	Miles	0	1	0	1.1	350.5
Diversion ditches	Feet	0	300	0	0	30,777.0
Floodwater retarding structures	Number	1	0	0	0	4.0
Grade stabilization structures	Number	0	0	574.0	0	1,690.0
Streambank stabilization	Miles	0	0	0	0	11.3
Land treatment measures						
Critical area stabilization by tree planting and other measures	Acres	1,360	840	308.0	513.0	334,819.1
Forest road and roadbank						
Stabilization	Miles	34	77.9	478.0	213.3	2,734.7
Area treated	Acres	206	730	285.0	707.0	20,049.9
Forest watershed management						
Plans prepared	Number	599	1,933	1,169.0	1,133.0	24,573.0
Area included	Acres	25,588	56,566	82,553.0	70,294.0	2,146,645.0
Firebreaks and fuelbreaks	Miles	36	41	22.5	43.0	3,445.5
Fire roads and trails	Miles	46	0	38.0	13.0	622.6
Fire hazard reduction	Acres	0	2,025	587.0	0	14,737.3
Fire water developments	Number	1	0	0	2.0	186.0
Fire towers	Number	0	0	0	0	46.0
Heliports and helispots	Number	0	1	0	1.0	461.0
Mobile equipment	Number	0	0	0	1.0	120.0
Other fire improvements	Number	0	4	5.0	1.0	226.0
Permanent radio installations	Number	0	0	0	5.0	318.0
Proper harvest cutting	Acres	7,644	8,674	57,266.0	51,064.0	666,248.0
Forest stand improvement	Acres	0	0	490.0	0	660,954.0
Tree planting and seeding	Acres	1,792	5,841	8,506.0	9,492.0	521,507.0
Woodland thinning and release	Acres	1,410	2,669	5,704.0	1,185.0	456,110.0
Revegetation, surface mined areas	Acres	144	325	177.0	170.0	8,077.0
Woodland grazing control	Acres	412	614	3,567.0	1,795.0	190,975.0
Woodland owners assisted	Number	8,562	11,297	12,680.0	11,316.0	636,740.0

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Table 62.--Research publications by major subject area--fiscal years 1981-83

	Number of publications		
	1983	1982	1981
Environmental Research			
Watershed management	**168**	130	136
Wildlife	**134**	136	144
Range	**101**	50	46
Fisheries habitat	**28**	21	31
Forest recreation	**87**	60	71
Urban forestry	**41**	23	33
Disturbed areas rehabilitation	**39**	19	41
Subtotal	**598**	439	502
Insect and Disease Research			
Insect detection and evaluation	**13**	78	54
Insect biology	**107**	79	106
Insect control and management strategies	**119**	103	92
Disease detection and evaluation	**8**	21	34
Disease biology	**85**	78	59
Disease control and management	**48**	32	45
Air pollution	**15**	11	13
Mycorrhizae 1/	**23**	34	--
Wood products organisms	**37**	22	16
Subtotal	**455**	458	419
Fire and Atmospheric Sciences Research			
Fire prevention, hazard reduction, and prescribed burning	**18**	24	22
Fire management methods and systems	**37**	24	13
Forest fire science	**23**	14	22
Ecological relations	**27**	16	29
Weather modification and weather effects	**32**	28	13
Subtotal	**137**	106	99
Timber Management Research			
Biological relations	**117**	73	106
Silviculture	**181**	167	112
Management mensuration	**66**	60	91
Genetics and tree improvement	**104**	82	76
Special products	**20**	11	4
Subtotal	**488**	393	389

Table 62.—Research publications by major subject area—fiscal years 1981-83—Continued

	Number of publications		
	1983	1982	1981
Economics and Marketing Research			
Forest resource evaluation	99	92	88
Forest economics	128	122	60
Supply, demand, and price analysis 2/	--	--	34
Subtotal	227	214	182
Products and Engineering Research			
Forest engineering systems	50	38	39
Wood engineering	53	49	44
Chemistry, fiber, and fuel products	91	72	71
Utilization potential and processing of wood	130	98	141
Protection of wood in use 1/	13	14	--
Subtotal	337	271	295
General 1/	17	28	--
Grand total	2,259	1,909	1,886

1/ This subject area was not reported separately in 1981.
2/ This subject area was combined and reported with Forest economics beginning in 1982.

Table 63.—Forest Research funding 1/—fiscal year 1983 compared to 1980-83 average

	1983		1980-83 average	Percent of actual to average
	Actual	RPA		
	1,000 constant 1983 dollars 2/			
Appropriated funds				
Land and resource protection research				
Fire and atmospheric science	**8,484**	14,298	9,452	90
Forest insect and disease	**21,577**	33,532	22,553	96
Renewable resources evaluation	**12,337**	21,008	13,954	88
Renewable resources economics	**4,979**	10,227	5,283	94
Surface environment and mining	**1,721**	4,048	1,865	92
Subtotal	**49,098**	83,113	53,107	92
Renewable resources management and utilization research				
Trees and timber management	**20,585**	35,687	21,778	95
Forest watershed management	**9,240**	18,882	9,898	93
Wildlife, range, and fish habitat	**8,706**	14,811	9,266	94
Forest recreation	**2,146**	4,329	2,248	95
Forest products utilization	**15,190**	27,224	16,804	90
Forest engineering	**2,707**	5,814	2,825	96
Subtotal	**58,574**	106,747	62,819	93
Research construction	**454**	10,483	1,961	23
Total, appropriated funds	**108,126**	200,343	117,887	92
Nonappropriated funds				
Other Federal Government agencies	**1,449**	-- 3/	1,642	88
State and local governments	**125**	--	89	140
Private industry	**0**	--	3	0
Other	**38**	--	67	57
Total, nonappropriated funds	**1,612**	--	1,801	89
Grand total	**109,738**	200,343	119,688	92

1/ In order that a comparison may be made with 1983 Actual, general administration has been eliminated from individual line items. Total appropriated general administration funds are included in the "General Administration" line item on table 11.
2/ GNP implicit price deflator used for 1980-82.
3/ -- = not reported in the RPA.

Table 64.—Extramural research funded through the Forest Service—fiscal years 1982 and 1983

Type of recipient	1983		1982	
	1,000 Dollars	Number	1,000 Dollars	Number
Domestic grantees				
Universities and colleges				
Land-grant research institutions	6,300	337	7,365	345
S&E-CR 1/	373	5	422	9
1890 Land-Grant and predominately Black institutions	266	12	121	6
Other non-Land-Grant institutions	1,596	103	1,742	114
S&E-CR 1/	17	1	122	5
Subtotal, universities and colleges	8,552	458	9,772	479
Other domestic				
Industrial firms	5	1	-- 2/	--
Profit organizations	61	5	291	13
Nonprofit institutions and organizations	158	12	233	17
Federal, State, and local governments	204	9	391	13
Private individuals	87	10	79	10
Small business innovation research	249	16	-- 2/	--
Subtotal, other domestic	764	53	994	53
Total, domestic	9,316	511	10,766	532
Foreign grantees				
Universities and colleges	9	2	-- 2/	--
Government agencies	25	1	82	4
Nonprofit institutions and organizations	3	1	14	1
Total, foreign grantees	37	4	96	5
Grand total	9,353	515	10,862	537

1/ Grants executed by Science and Education-Cooperative Research with Forest Service Accelerated Pest Program funds.
2/ -- = no grantees in this category.

Revised Statement of Policy

Pursant to section 310 of Public Law 96-514, dated December 12, 1980:

The Statement of Policy transmitted by the President to the Speaker of the House of Representatives and the President of the Senate on June 19, 1980, as required under section 8 of the Forest and Rangeland Renewable Resources Planning Act of 1974, is revised and modified to read as follows:

Basic Principles

It is the policy of the United States--

(1) forests and rangeland, in all ownerships, should be managed to maximize their net social and economic contributions to the Nation's well being, in an environmentally sound manner.
(2) the Nation's forested land, except such public land that is determined by law or policy to be maintained in its existing or natural state, should be managed at levels that realize its capabilities to satisfy the Nation's need for food, fiber, energy, water, soil stability, wildlife and fish, recreation, and esthetic values.
(3) the productivity of suitable forested land, in all ownerships, should be maintained and enhanced to minimize the inflationary impacts of wood product prices on the domestic economy and permit a net export of forest products by the year 2030.
(4) in order to achieve this goal, it is recognized that in the major timber growing regions most of the commercial timber lands will have to be brought to and maintained, where possible, at 90 percent of their potential level of growth, consistent with the provisions of the National Forest Management Act of 1976 on Federal lands, so that all resources are utilized in the combination that will best meet the needs of the American people.
(5) forest and rangeland protection programs should be improved to more adequately protect forest and rangeland resources from fire, erosion, insects, disease, and the introduction or spread of noxious weeds, insects, and animals.
(6) the Federal agencies carrying out the policies contained in this Statement will cooperate and coordinate their efforts to accomplish the goals contained in this Statement and will consult, coordinate, and cooperate with the planning efforts of the States.
(7) in carrying out the Assessment and the Program under the Forest and Rangeland Renewable Resources Planning Act of 1974 and the Appraisal and the Program under the Soil and Water Resources Conservation Act of 1977, the Secretary of Agriculture shall assure that resource and economic information and evaluation data will be continually improved so that the best possible information is always available for use by Federal agencies and the public.

Rangeland Data Base and its Improvement

The data on and understanding of the cover and condition of rangelands is less refined than the data on and understanding of commercial forest land. Rangelands have significant value in the production of water and protection of watersheds; the production of fish and wildlife food and habitat; recreation; and the production of livestock forage. An adequate data base on the cover and condition of rangelands should be developed by the year 1990. Currently, cattle production from these lands is annually estimated at 213 million animal unit months of livestock forage. These lands should be maintained and enhanced, including their water and other resource values, so that they can annually provide 310 million animal unit months of forage by the year 2030, along with other benefits.

General Acceptance of High Bound Program

Congress generally accepts the "high-bound" program described on pages 7 through 18 of the 1980 Report to Congress on the Nation's Renewable Resources prepared by the Secretary of Agriculture. However, Congress finds that the "high-bound" program may not be sufficient to accomplish the goals contained in this statement, particularly in the areas of range and watershed resources, State and private forest cooperation and timber management.

States and owners of private forest and rangelands will be encouraged, consistent with their individual objectives, to manage their land in support of this Statement of Policy. The State and private forestry and range programs of the Forest Service will be essential to the furtherance of this Statement of Policy.

In order to accomplish the policy goals contained in this statement by the year 2030, the Federal Government should adequately fund programs of reasearch (including cooperative research) extension, cooperative forestry assistance and protection, and improved management of the forest and rangelands. The Secretary of Agriculture shall continue his efforts to evaluate the cost-effectiveness of the renewable resource programs.

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